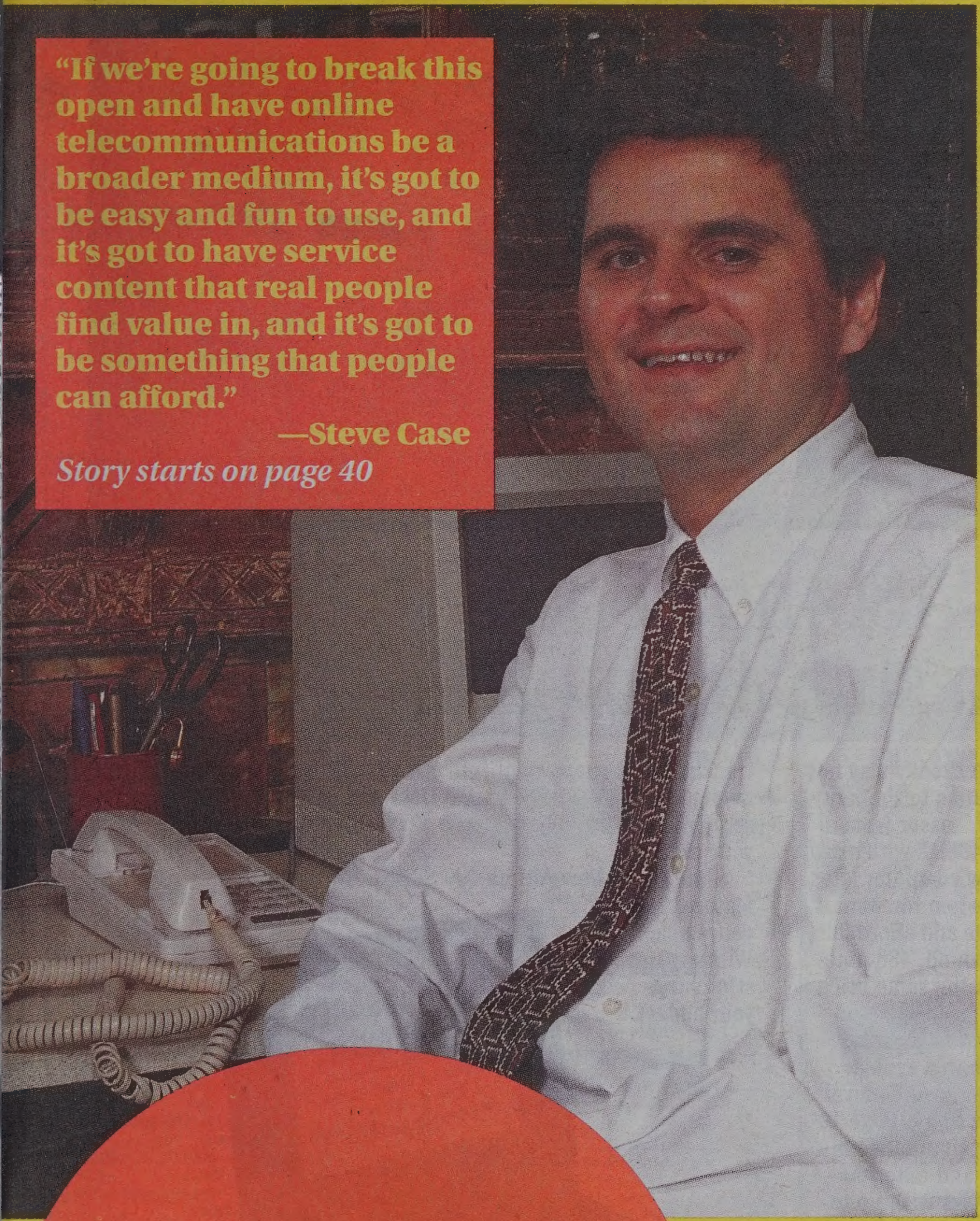
CompuExpo:
Global OEM Showcase
PREVIEW STARTS ON PAGE 70

Southern California's Computer Magazine
Aug. 17, 1992 • 99
FREE

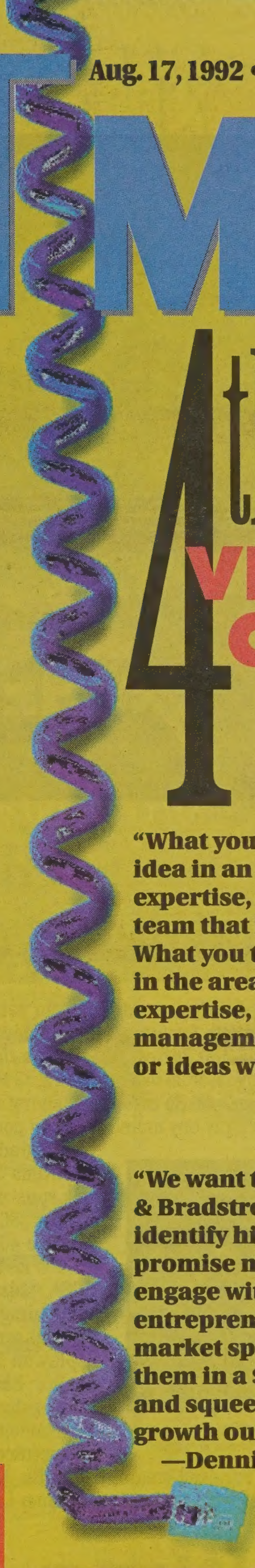
MICROTIMES™



"If we're going to break this open and have online telecommunications be a broader medium, it's got to be easy and fun to use, and it's got to have service content that real people find value in, and it's got to be something that people can afford."
—Steve Case

Story starts on page 40

GETTING AMERICA Online



4th annual VENTURE CAPITAL ISSUE

SPECIAL SECTION STARTS ON PAGE 60

"What you'd like to find is a great idea in an area in which you have expertise, with a management team that is highly motivated. What you typically find are deals in the area in which you have expertise, with either management teams with no ideas, or ideas with no management."
—William Davidow, Mohr, Davidow Ventures

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—Dennis Sisco, D&B Enterprises

20 MHz
25 MHz
33 MHz

The 486 notebook that lets you shift to another gear.

The power you need from your computer today may not be enough for tomorrow. But now, thanks to the new Altima 400 Series, you can rev the processor from a speedy 20 or 25 to a screaming 33 MHz 486DX with math coprocessor. So instead of buying a new computer later, you simply buy more speed and power when you want it.

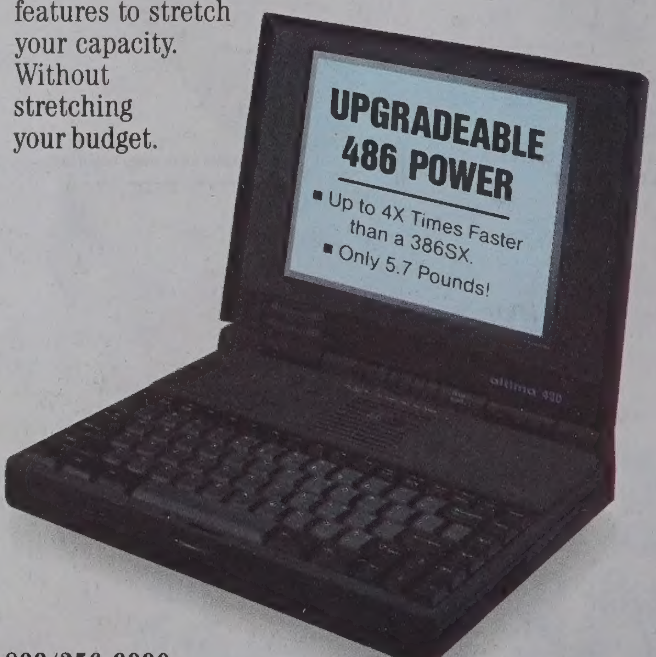
Optional Trackball
Shown Actual Size

Upgradeable and affordable, the Altima 5.7 pound, 486 notebook runs about the same price as most 386's.

The 400 Series is up to 4-times faster than a typical 386SX, plus it features 64 level gray scaling (not 32); a large 10″ diagonal screen; simultaneous display on LCD and external monitor; hard disks with up to 120 megabytes; and a keyboard arrangement that makes sense, not sacrifices.

For even greater flexibility, Altima offers options to put you in the express lane. Like an integrated trackball that snaps right into the unit. Or an internal modem with 2400 BPS, MNP-5 Data and 9600 BPS send/receive fax. There's even a DC adapter for your car.

Shift to the New Altima 400 Series. It has the features to stretch your capacity. Without stretching your budget.



altima

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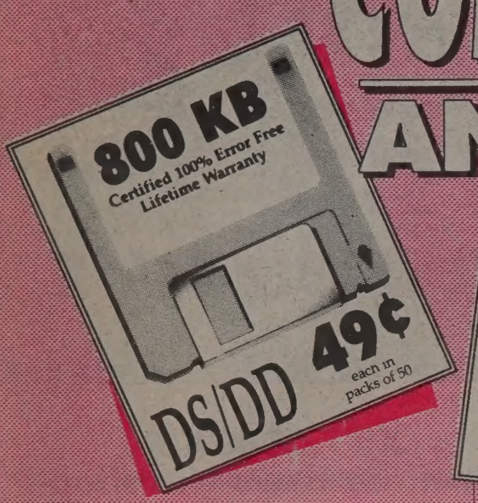

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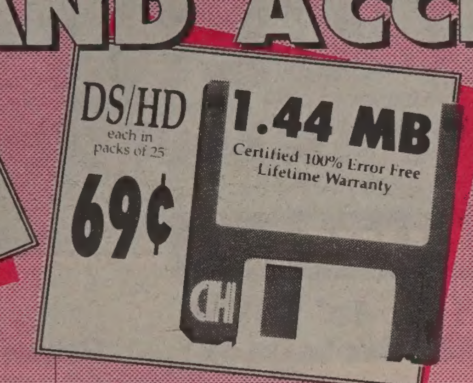

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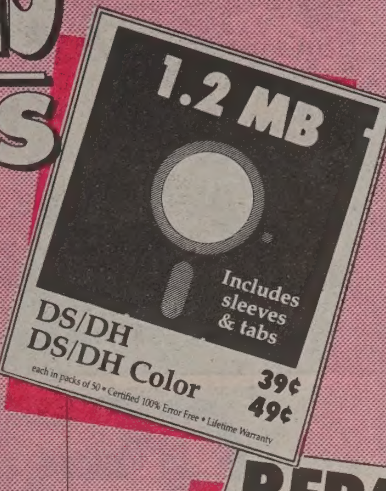

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- 2 MB Ram
- 40 MB Hard Drive
- 1.2 & 1.44 Floppy Drive
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- 1 MB ATI Video Card
- 101 Key Keyboard
- Windows 3.1 & Mouse
- Dos 5.0

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USA 386-33

- Intel Microprocessor
- 64K Cache
- 4 MB Ram
- 120 MB Hard Drive
- 1.2 & 1.44 Floppy Drive
- SVGA 14″ Color Monitor (CTX .28 Dot Pitch)
- 1 MB ATI Video Card
- 101 Key Keyboard
- Windows 3.1 & Mouse
- Dos 5.0

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USA 486-33

- Intel Microprocessor
- 256K Cache
- 4 MB Ram
- 120 MB Hard Drive
- 1.2 & 1.44 Floppy Drive
- SVGA 14″ Color Monitor (CTX .28 Dot Pitch)
- 1 MB ATI Video Card
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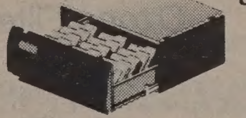

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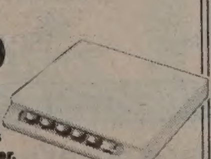

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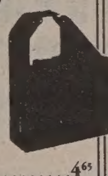

Printer Type	Min. 6
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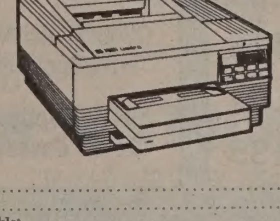
PRINTERS



HP III	$1399
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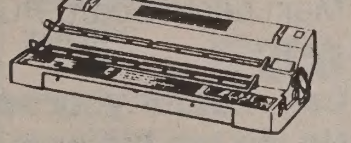

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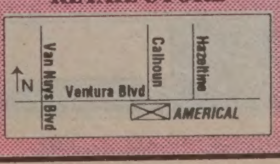

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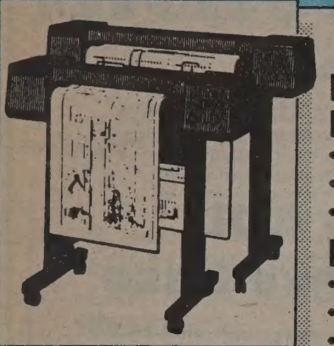

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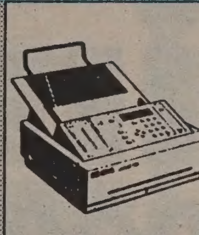

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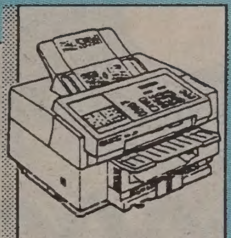

HP LASERJET FAX 200
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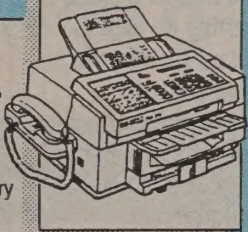

HP LASERJET FAX 310
- 28 page memory upgradable to (30, 60, 120)
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- 512KB standard
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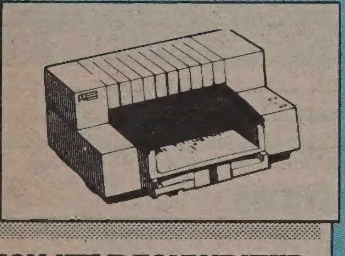
HP PRINTER BLOWOUT



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- Laser quality
- Built-in scalable fonts
- 300 dpi Resolution
- 3 year warranty
- Including cable, paper

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- 330 different shades
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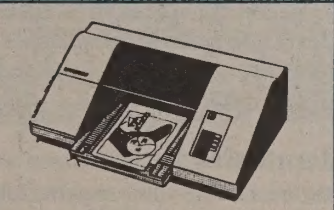
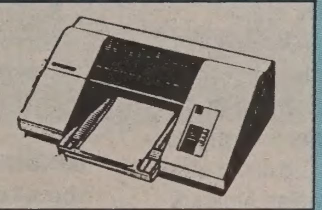


HP PAINTJET XL/PAINTWRITER XL
(IBM) (MAC)
- A & B size media
- 180 DPI resolution
- 330 different shades of color
- Paper & transparency
- AppleTalk for Mac users

$1640



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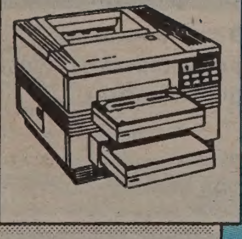

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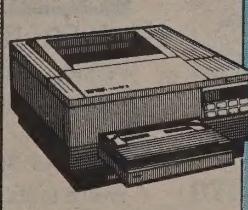

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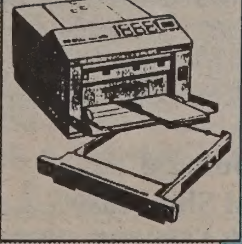

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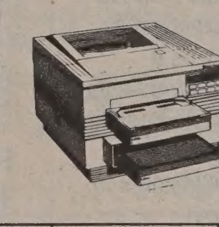

HP LASERJET IIID
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AUG. 17, 1992 ISSUE #99

MICROTIMES

TABLE OF CONTENTS

A NOTE FROM THE EDITORS

As we come to our yearly look at the state of the venture capital industry, with interviews with venture capitalists William Davidow and Dennis Sisco starting on page 60, we discover a state of great uncertainty and great opportunity. With investment opportunities ranging from digital content to wireless networking, the rewards and pitfalls currently awaiting entrepreneurs and investors have been compared to the early days of the personal computer industry.

Our cover story profiles America Online, a classic success story for its investors, who saw both the opportunity in mass-market online services and the importance of strategic alliances to their ultimate success. The experiences of AOL as it evolved from idea to growing public company offer useful insights to today's startups—even if they're taking on a somewhat different business challenge.

—*ME*

COVER STORY

GETTING
AMERICA
Online

An Interview With AOL President/CEO Steve Case

By Mary Eisenhart 40

Cover photo: Susana Millman

The only independent company among the nation's leading online services, America Online is achieving rapid growth by offering a unique combination of ease of use and low cost. President Steve Case talks about how AOL got started and where it's going, with strategic partners ranging from Microsoft to the *Chicago Tribune.*

NEWS & VIEWS

Letters 14

Industry Insight *By Paul Hoffman* 18

- *Cyrix Wins Right To Make 387 Coprocessor* 18
- *Intel Delays P5* 18
- *Borland Loses Summary Judgment In Lotus Suit* 20
- *Microsoft Ships NT To Developers* 22
- *Technology News From Japan* 22
- *MicroTimes Stock Index* 24

Realizable Fantasies *By Jim Warren* 29

Should computer-accessible voter registration records be available to the general public?

Dvorak's Last Column *By John C. Dvorak* 162

Another view of what's really going on at Microsoft...

BUSINESS SOLUTIONS

Pens And Palmtops *By Mitsu Hadeishi* 32

The Psion Organizer 3, more Newton news, etc.

4th Annual Venture Capital Issue
starts on page 60

Venture capitalists William Davidow and Dennis Sisco discuss their firms' approach to investment and the entrepreneurial opportunities currently available for innovators.

Preview: CompuExpo '92: The Global OEM Showcase 70

For system integrators, VARs, large-volume buyers, and others interested in taking advantage of the latest innovations in the PC-compatible marketplace from vendors all around the world, the premiere of CompuExpo in September offers unprecedented one-stop shopping opportunities—in time for the peak selling season.

FEATURE

Amiga On Novell Networks *By Douglas J. Nakakihara* 74

ACS from Oxxi lets the Amiga operate on a Novell network of PCs.

Mike Markowitz' Series "Your First Computer," will return in issue #100.

PRODUCT SPOTLIGHT

Product Updates 78

NEW PRODUCTS

Macintosh Hardware

- *PowerPort Internal Faxmodem* 78
- *Radius VideoVision* 78

Macintosh Software

- *Personal Press 2.0* 80
- *Asanté PersonToPerson* 80
- *RetrieveIt!* 80

REVIEWS

Games *By Mike Markowitz*

- *Crisis In The Kremlin* 86
- *Super Space Invaders* 94
- *Gateway* 102

CD-ROM Software

- *Imagecels CD-ROM Library* 102
- *The View From Earth* 108
- *Composer Quest* 112

CREATIVE TOOLS

3D Studio *By Ernest R. Tello* 117

Version 2 adds new capabilities to Autodesk's professional animation and modeling tool for the desktop.

BMUG *By David Morgenstern* 122

Weird tales from the Mac universe.

RESOURCES

Calendar Of Events 134

- *Computer Show: Pomona* 134
- *UCLA Extension Open House* 134
- *Pen-Based Computing Expo* 136

User Group Network 141

Classifieds 155

Index Of Advertisers 160

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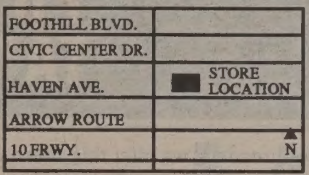

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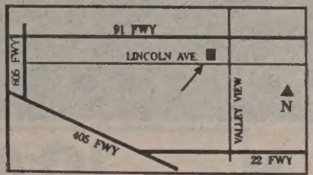

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PRODUCT-ORIENTED TABLE OF CONTENTS

As a service to our readers, we offer this alternative table of contents, with the information organized by product and machine type.

TELECOMMUNICATIONS

Getting America Online 40
An Interview With AOL President/CEO Steve Case
By Mary Eisenhart
The only independent company among the nation's leading online services, America Online is achieving rapid growth by offering a unique combination of ease of use and low cost. President Steve Case talks about how AOL got started and where it's going, with strategic partners ranging from Microsoft to the *Chicago Tribune.*

PALMTOP COMPUTERS

Pens And Palmtops 32
By Mitsu Hadeishi
The Psion Organizer 3, more Newton news, etc.

PCs

Preview: CompuExpo '92: The Global OEM Showcase 70
For system integrators, VARs, large-volume buyers, and others interested in taking advantage of the latest innovations in the PC-compatible marketplace from vendors all around the world, the premiere of CompuExpo in September offers unprecedented one-stop shopping opportunities—in time for the peak selling season.

3D Studio 117
By Ernest R. Tello
Version 2 adds new capabilities to Autodesk's professional animation and modeling tool for the desktop.

NETWORKS

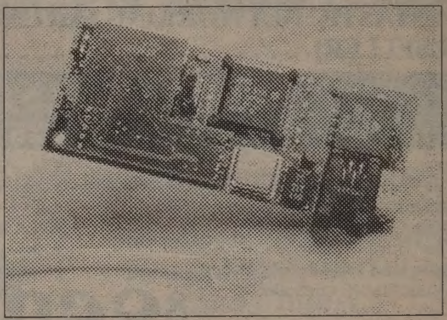
Amiga On Novell Networks.............74
By Douglas J. Nakakihara
ACS from Oxxi lets the Amiga operate on a Novell network of PCs.

MACINTOSH

BMUG 122
By David Morgenstern
Weird tales from the Mac universe.

New Products
Macintosh Hardware

PowerPort Internal Faxmodem 78
Radius VideoVision 78



Page 78

Macintosh Software

Personal Press 2.0 80
Asanté PersonToPerson 80
RetrieveIt! 80

AMIGA

Amiga On Novell Networks.............74
By Douglas J. Nakakihara
ACS from Oxxi lets the Amiga operate on a Novell network of PCs.

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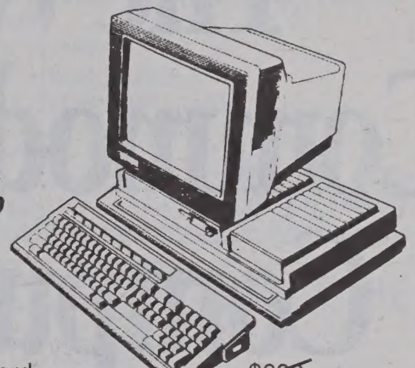

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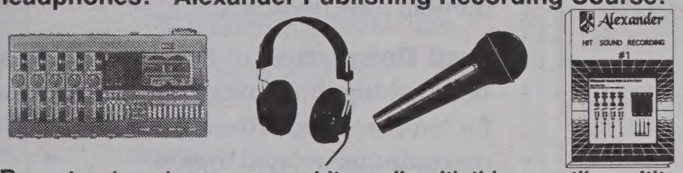

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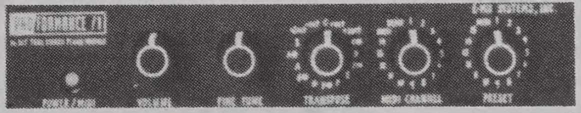

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CONTRIBUTORS

Starting with our feature on SGI's Ed McCracken a couple of months ago, our cover and cover story designs have been the work of Lee Ann Nelson. After ten years with us at BAM Publications, where she achieved great distinction as first Art Director, then Creative Director, Lee Ann recently left to start her own company, Nelson Design (510/837-8531). Since we've been getting many compliments on her work lately, we thought this would be an opportune time to give thanks and credit where they're due!

We'd also like to welcome our newest contributor, Douglas Nakakihara of scenic Simi Valley. Longtime (and pathologically observant) readers may recall Doug as a frequent correspondent who could be counted on to defend the Amiga against its ill-advised detractors. When former Amiga columnist Matthew Leeds recently published his farewell column, we immediately heard from Doug (a CPA for Sunkist by day, an Amiga zealot the rest of the time) and his intrepid brother James, who works in marketing for Commodore, reminding us that there was *plenty* of Amiga news out there...So, with this month's entry on Amiga-based Novell networking, Doug takes up his mission of keeping *MicroTimes* relevant to the Amiga community.

—*ME*

John C. Dvorak is a columnist, book author, software publisher, radio talk show host, and frequent speculator as to what's really going on at Microsoft.

Mitsu Hadeishi is the founder of a San Diego-based company, Open Mind, which is involved in interactive entertainment, neural network research, and object-oriented software development environments.

Paul Hoffman is an industry analyst who's been writing about microcomputer technology for ten years, and is the author of several books on computer-related topics.

Matthew Leeds works at Brøderbund Software, where he's in the process of setting up a network he promises to write about sometime. Meanwhile, he writes about graphics and multimedia-based subjects.

Woody Liswood has been writing about microcomputer hardware and software since 1980. He has also published a book on micro-based Human Resources Information systems.

Mike Markowitz is a longtime contributor whose work has appeared in *MicroTimes* since 1984. He works in the computer lab of a major Southern California university.

David Morgenstern is a BMUG volunteer and works in the library at San Francisco State.

Ernest J. Tello is a free-lance writer based in the Santa Cruz area.

Jim Warren, a pioneer of the personal computer industry, founded and chaired the First Conference on Computers, Freedom & Privacy. He currently serves on the board of directors of Autodesk.

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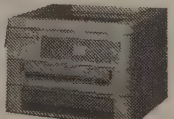

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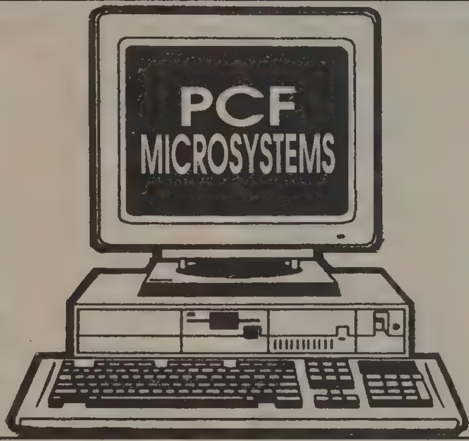

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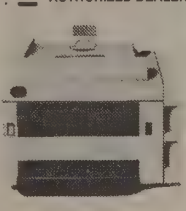

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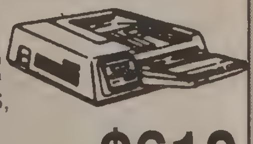

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Letters

OS/2: ANOTHER VIEW

I feel the need to take issue with Paul Hoffman's review of OS/2 2.0 [Issue 96N, 97S]. First, Mr. Hoffman states that IBM does not provide good service to the "small user." I called their 800 tech support line, and although their system is a little unique, I found their support to be fast, friendly, and knowledgeable. Certainly no worse than Microsoft and much better than Quarterdeck, both of which are toll calls. However, I do believe that IBM's policy of limiting free support to 60 days is a very bad move!

Installation: [Mr. Hoffman writes:] "One humorous note is you must do the installation from your A drive." Has Mr. Hoffman ever tried to install DOS from the B drive? Has he ever tried to install DOS? I also feel that Mr. Hoffman's complaints concerning the number of disks that must be loaded to add features to OS/2 is nothing but pure nit-picking.

Driver Problems:

1. While it would have been nice if OS/2 2.0 included Stacker, I feel that blaming IBM for other companies not having their products available sooner is just plain silly.

2. I have an Adaptec 1542B SCSI controller, and OS/2 immediately and automatically installed the correct driver, which has worked flawlessly! Obviously if the driver works for me and thousands of others, there is nothing wrong with the driver. Perhaps Mr. Hoffman has a conflict between his controller and another card. While DOS will allow interrupt sharing, OS/2 will not.

Perhaps Mr. Hoffman was not aware that most software includes a readme file filled with information that was not ready in time to be included in the manual. Hopefully he will be less shocked the next time he is referred to one.

The User Comes Last: Was this written by Bill Gates? This drivel about IBM tech support attitudes and OS/2 being different from Windows is pure silliness. You mean OS/2 doesn't have a screen saver? Come off it! Who cares about the mediocre screen saver in Win 3.1? What I like about OS/2 2.0 is its great interface and the fact that I haven't had a UAE or GPF since I installed it. Can you say that about Windows?

Steve Hollingsworth
Fax

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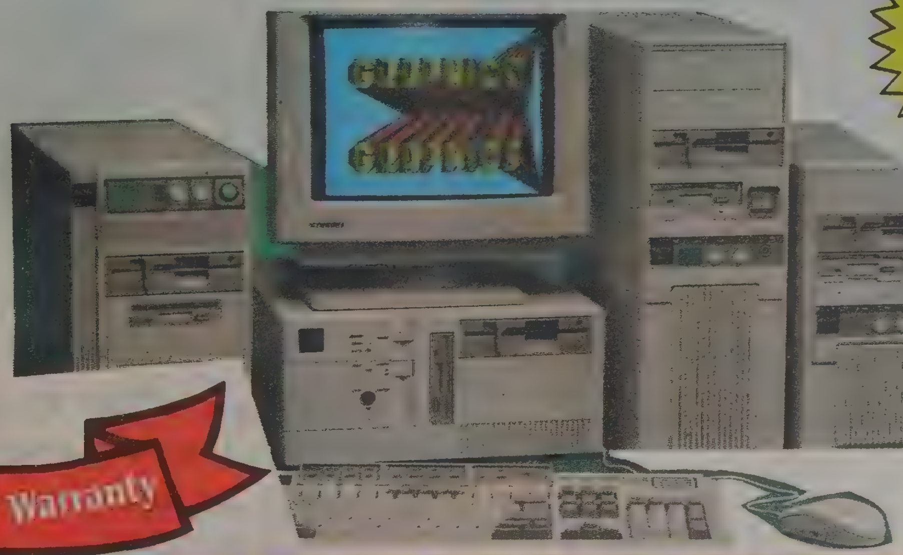

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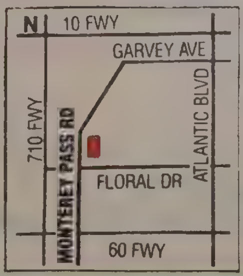

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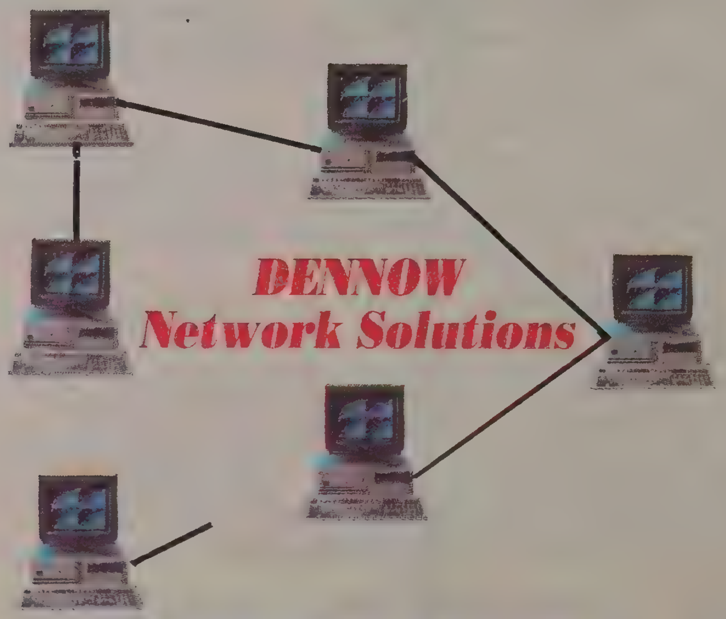

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INDUSTRY INSIGHT

Chips And Lawsuits

BY PAUL HOFFMAN

CYRIX WINS RIGHT TO MAKE 387 MATH COPROCESSOR

In a stunning defeat for Intel, Cyrix won a costly court battle that gives it the right to continue selling Cyrix's own version of the 80387 math coprocessor chip based on a cross-licensing agreement between Intel and SGS-Thompson, the actual manufacturer.

US District Court Judge Paul Brown said that since SGS-Thompson has a broad cross-license agreement to make Intel-compatible chips, Cyrix cannot be sued for designing and selling those chips as long as SGS-Thompson manufactures them. Intel promised to appeal immediately.

The case could have profound effects for Intel in three broad areas:

•Although there is currently not much of a market for 387 math coprocessors, that may be because they are so expensive. Many 386 users who need faster systems may opt to buy a 387 instead of upgrading their motherboard to a 486 if the price of the 387 dropped significantly. Cyrix is in a much better position to sell cheap 387s than Intel is, because Intel knows that those sales erode sales for its more profitable 486 CPUs.

•Intel has many cross-licensing agreements with chip "foundries" like SGS-Thompson. For example, Texas Instruments (TI) has such an agreement, and in fact is a foundry for Cyrix's 486SX clone. This ruling may give some of these foundries an impetus to start making other Intel-compatible chips, such as clones of the 486 or other valuable CPUs.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

Intel has already been fighting off such rulings with other of its competitors like AMD and Chips and Technologies. Cyrix has already announced that it will have a full-blown 486 clone that will compete head-to-head with Intel's by the end of this year. Now that it knows (at least until the appeal is heard) that it can use the foundry defense successfully, Cyrix will be able to price the chip lower, eating into Intel's profits.

•Given the bullying (some would say monopolistic) posture that Intel has taken around competitors, Intel could be hit with major damages in Cyrix's countersuit. Clearly, Intel's posturing has reduced Cyrix's potential market, but it is unclear about how much Cyrix can convince a jury to give them. An award in the range of $50 million would not hurt Intel much, but it would give tiny Cyrix a huge boost.

Although there is currently not much of a market for 387 math coprocessors, that may be because they are so expensive.

Intel's appeal may take a long time, and it could, of course, get the decision reversed. Until then, however, the damage to Intel's bottom line could be significant. The more foundries with cross-licensing agreements decide to test the waters, the harder it will be for Intel to bully PC manufacturers into using only Intel chips. Small companies like Cyrix will not hurt Intel much in the coming months, but by the end of this year, Intel's CPU market may be vulnerable on all levels.

INTEL DELAYS P5

You won't see the P5/586 CPU this year, and that could be bad news for some users who were pinning their hopes on that processor. Intel announced last month that it was delaying the full release from late this year into the first quarter of 1993. Industry sources say that the two main reasons for the delay will in fact be to the advantage of most users. Intel wanted more time to test the chip in real-world environments to avoid creeping bugs such as those found in previous CPUs, and to be sure that it had enough chips available at the rollout so that all manufacturers would have a good supply immediately.

If you were hoping to see PC prices drop again later this year when the P5 (Intel's official designation for the new CPU) was released, you will have to wait. Many manufacturers are starting to hurt from the last round of cuts that didn't increase PC sales by much but certainly cut profits, and they are not about to cut prices again until they have to.

When the P5 is released, Intel will probably price it above the current price for the fastest 486, but will probably also lower prices on the entire 486/486SX line. The first systems based on the P5 will probably cost almost twice as much as the fastest 486, although they may not result in twice as much computing power. A round of 486 CPU price cuts would certainly cause a round of PC price cuts, making the gap between 486 and 586 systems even larger.

Few users will "need" a P5, even with the delayed schedule. The most common mar-

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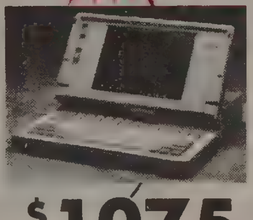

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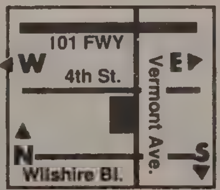

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TOP COMPUTER SYSTEMS • 401S. VERMONT AVE., SUITE 5,6 LOS ANGELES, CA 90020 kets for the P5 will be computer-aided design (CAD) users and people using drawing and photo touch-up programs, as well as those needing faster network fileservers. Intel is just starting to officially release details of how the P5 will differ from the top-of-the-line 486s, and the market will probably react slowly when the chips first come out. Many businesses are still in the process of moving from the 386 to the 486, and they aren't about to switch again soon.

The cost of the P5 will probably be prohibitive, even in its target markets. It is likely to cost PC makers $1000 apiece, compared to about $400 for the top-of-the-line 486. One reason the P5 will cost so much is that Intel is using a totally new chip-fabrication method that will squeeze almost three times as many transistors into the same chip area. The new method is also the reason Intel wants more time to produce the chip: a single new manufacturing glitch could put the project off by a month.

On the technical side, you can expect the first P5 to run at either 66 or 75MHz, and that the typical user will see about twice the raw speed as a 486 running at the same clock rate. Where the P5 will really scream is in floating-point math: it will run about five times as fast as a 486 in math-intensive programs. This number can be misleading, in that you will only get that kind of increase if the program is specially compiled to take advantage of the P5 by putting all the math calculations near each other. This can easily be done for custom applications if compiler manufacturers like Microsoft and Borland optimize for the P5, but it is unlikely that commercial applications will see that kind of speed increase unless they release P5-specific versions.

BORLAND LOSES SUMMARY JUDGMENT IN LOTUS SUIT

As many people expected, Lotus won the first round in its copyright infringement suit against Borland by convincing US District Court Judge Robert Keeton that Borland clearly copied Lotus' screen display and command structure. The next step is the full trial before the jury, where Borland can hope for either a lenient jury or a victory on appeal. Lotus' previous copyright suits were before the same judge, and he ruled in Lotus' favor almost every time, thus making this decision

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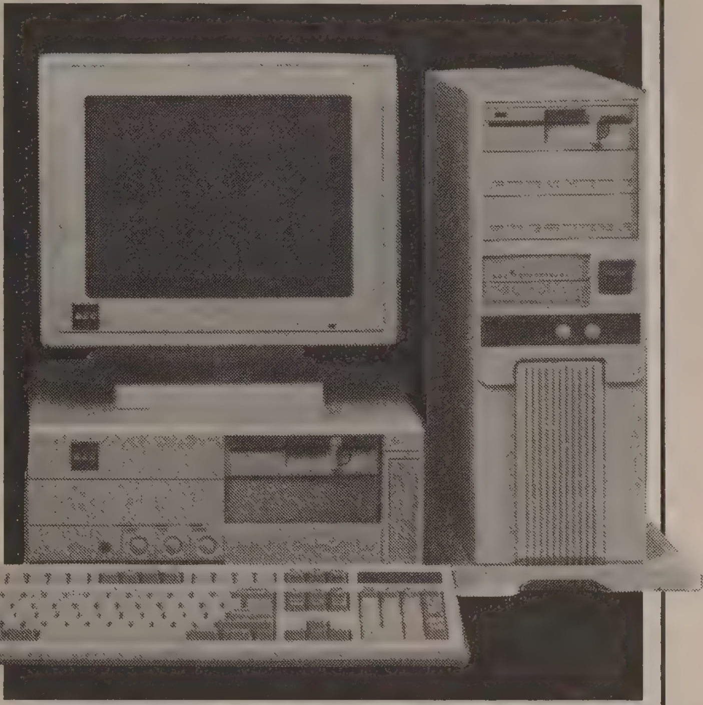

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unsurprising.

The case revolves around the user interface of Borland's Quattro Pro. Borland shipped earlier versions of Quattro Pro with a default interface that almost exactly matched that of Lotus 1-2-3. Borland made a big deal about the fact that you could change the interface (both the placement of the menus and the keystrokes you use to initiate an action), but it was well known that only a tiny fraction of users made this change. Lotus sued, saying that the "look and feel" of its program were being copied.

Judge Keeton ruled in favor of Lotus in many earlier cases, such as the Paperback Software and Mosaic suits, and he used the same reasoning in this preliminary judgment. It is likely that Borland will appeal any eventual ruling because other judges have disagreed with Judge Keeton about the absolute value of a look and feel, as well as how much damage from such an infringement should be assessed against the copier.

MICROSOFT RELEASES WINDOWS NT TO DEVELOPERS

In one of the biggest rollouts of a future operating system, Microsoft attracted almost five thousand people to its Win32 Developer's Conference and showered them with enough software and documentation to ensure that there will be lots of NT programs when the operating system ships next year. Microsoft won the hearts and minds of many developers by proving how well NT works today and showing how the operating system will help them for many years. Given how few companies have announced OS/2-specific programs, Microsoft is probably correct in feeling smug about the future of NT.

> **Given how few companies have announced OS/2-specific programs, Microsoft is probably correct in feeling smug about the future of NT.**

From a software developer's standpoint, NT's biggest features will be its portability to RISC processors, its outstanding multitasking, and its ability to run many current MS-DOS and Windows 3.1 programs. Its weakest points from a user's standpoint are its large memory and disk requirements, its inability to run popular utilities like the Norton Utilities and Fastback, and its inability to handle device drivers for hardware like faxes and scanners. These drawbacks are significant, but software and hardware manufacturers may ameliorate them by having replacements ready by the time Microsoft ships NT next year.

Microsoft's developer kit won high praises from people who had suffered through developing Windows 3.0 programs. It allows most companies with existing Windows software to convert to NT with little problem. Basically, if a program doesn't do anything fancy with tasks, doesn't do any direct hardware manipulation, and follows Microsoft's somewhat cryptic memory standards, the transition to NT will be fairly direct. If you developed your Windows program for the 386 Enhanced mode, you will have a harder time, but it will still be easier than the DOS-to-Windows translation.

The developers having the worst time developing for NT will be those who have to use hardware device drivers, such as fax boards, scanners, and communication cards (such as those used to emulate 3270 terminals). Microsoft has already warned that converting the DOS device drivers to NT will be difficult, and it will not be clear until NT is released which device drivers work.

This, of course, is the same problem the same companies still face with developing for OS/2, so Microsoft isn't much of a villain for it. However, users who expect their DOS or Windows programs that require hardware drivers to work under NT will be sorely disappointed. The biggest market loss will be for 3270 emulators, but many developers of those products insist that they will have NT versions out within months after NT is released.

Humorously, Microsoft has put itself into the ugly position that Apple was in when it released System 7 for the Macintosh. Microsoft wrote the biggest-selling programs for the Macintosh, and those programs contained some sloppy programming that Apple had to build defenses against in System 7. Now Microsoft has to build defenses against some sloppy MS-DOS and Windows programs into NT. Hopefully Microsoft will be more successful than Apple was at including the defensive code without affecting properly written programs. ■

Technology News From Japan

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, 612/871-7889. JMG covers products and events in the Japanese computer industry.)

➤**Kawasaki Systems Development**, a subsidiary of Kawasaki Steel, has developed a new software package, "F6680E for Mac," which allows Macintosh computers to retain their functionality while serving as terminals on systems based on Fujitsu's mainframe and supercomputer technology. Kawasaki expects to begin shipments in August, and projects first-year sales of one thousand to fifteen hundred packages.

➤**Sun Technology Enterprise**, a subsidiary of Sun Microsystems, will soon introduce its Sun application software to the Japanese market. It has begun developing software to link Sun workstations with IBM PCs—"PC-NFS" connects PCs to workstations, and "Sun-PC" will run Windows applications on Suns.

➤**Autodesk (Japan)** has announced the localized version of HyperChem 2, marking the company's entry into the molecular design market. The software runs on Windows-based PCs and Silicon Graphics workstations, and, at a price of 1 million yen, is considerably less expensive than competing products. The company anticipates sales of 1 billion yen ($8 million) in 1994.

➤**Microsoft (Japan)** has set up an Asia group organization to promote sales of Windows to OEM users, including PC manufacturers in Japan, Korea, and Taiwan. Microsoft hopes the new organization will be able to double Windows shipments in the area to five hundred thousand copies by June 1993.

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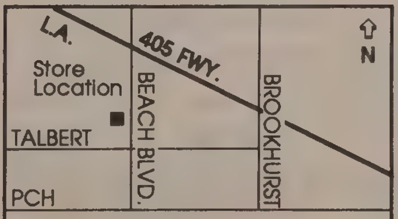

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Technology issues got caught up in the euphoria as well last month, triggering a 5.81% rally in the Microtimes Stock Index to a close of 3367.19.

Digital Equipment was in the news again last month as the company reported a fourth-quarter loss of $1.85 billion, primarily the result of a $1.5 billion restructuring charge. The loss amounted to $14.76 a share, compared with a loss in the year-ago quarter of $7.08 a share. The loss incurred a year ago also included a $1.5 billion restructuring charge. Stocks of the nation's second-largest computer maker, however, advanced $5.50 a share for the period, or 16.3%, to close the session at $39.25.

Compaq Computer made a spirited stride as its stock price rose $5 a share, or 20.41%, to close the term at $29.50. The company surprised investors with positive second-quarter earnings of 35 cents a share, up from 23 cents a share earned a year earlier. Separately, Brown Brothers raised its investment rating of the company to "buy" from "neutral" last month.

IBM reported positive second-quarter earnings of $1.22 a share, up from a mere 22 cents a share a year earlier. In spite of the elevated earnings report, however, investors unloaded the stock after the computer giant failed to meet analyst's predictions of earnings of between $1.30 to $1.35 a share. The news sent IBM's stock price crashing midway through the month, yet the company recently rallied $2 a share before closing the month of July at $94.75. The company said it is willing to cut more costs to address its profit margin problems. Last week, the company disclosed it will terminate eleven thousand to twelve thousand jobs at IBM in 1992. ■

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OTC	Adobe (L)	ADBE	44.75	38.00	-6.75	-15.08	16	0.32	0.84	68.50	35.75
OTC	Aldus	ALDC	13.00	14.63	1.63	12.50	16	0.00	0.00	45.00	11.50
OTC	Autodesk	ACAD	37.13	42.50	5.38	14.48	21	0.48	1.13	57.25	23.25
OTC	Borland (L)	BORL	41.00	47.75	6.75	16.46	–	0.00	0.00	86.75	35.00
OTC	Informix (H)	IFMX	29.00	37.75	8.75	30.17	17	0.00	0.00	39.00	5.50
OTC	Lotus (L)	LOTS	18.25	18.25	0.00	0.00	13	0.00	0.00	40.75	15.50
OTC	Microsoft	MSFT	69.88	72.75	2.88	4.11	30	0.00	0.00	88.84	47.84
OTC	Novell	NOVL	53.75	55.00	1.25	2.33	40	0.00	0.00	65.00	28.50
OTC	Oracle	ORCL	16.88	18.63	1.75	10.37	42	0.00	0.00	21.13	8.88
OTC	Software Publishing (L)	SPCO	8.88	9.50	0.63	7.04	–	0.00	0.00	26.25	7.50
OTC	Symantec (L)	SYMC	37.50	21.00	-16.50	-44.00	23	0.00	0.00	51.00	18.00
	HARDWARE										
OTC	Apple	AAPL	46.25	46.75	0.50	1.08	11	0.48	1.03	70.00	42.75
OTC	AST Research	ASTA	13.88	13.88	0.00	0.00	6	0.00	0.00	32.25	12.00
NYS	Commodore (L)	CBU	10.13	9.63	-0.50	-4.94	6	0.00	0.00	19.25	9.00
NYS	Compaq	CPQ	24.50	29.50	5.00	20.41	36	0.00	0.00	37.50	22.13
NYS	Digital Equipment	DEC	33.75	39.25	5.50	16.30	–	0.00	0.00	69.13	33.25
OTC	Dell	DELL	17.75	23.00	5.25	29.58	14	0.00	0.00	29.00	13.91
NYS	Hewlett-Packard	HWP	66.88	73.50	6.63	9.91	20	0.80	1.09	85.00	44.63
NYS	IBM	IBM	96.88	94.75	-2.13	-2.19	12	4.84	5.11	106.38	81.63
NYS	Silicon Graphics	SGI	17.50	22.25	4.75	27.14	–	0.00	0.00	29.75	14.13
OTC	Sun Microsystems	SUNW	26.13	26.75	0.63	2.39	14	0.00	0.00	35.88	20.75
NYS	Xerox	XRX	69.75	74.75	5.00	7.17	18	3.00	4.01	82.25	52.63
NYS	Tandy (L)	TAN	23.25	24.75	1.50	6.45	11	0.60	2.42	31.25	22.50
	CPU'S										
NYS	Advanced Micro Devices (L)	AMD	7.63	8.88	1.25	16.39	3	0.00	0.00	21.50	7.38
OTC	Intel	INTC	55.88	59.75	3.88	6.94	16	0.00	0.00	68.75	38.50
NYS	LSI Logic (L)	LSI	6.75	5.88	-0.88	-12.96	–	0.00	0.00	9.88	5.50
NYS	Motorola (H)	MOT	76.63	85.63	9.00	11.75	23	0.76	0.89	85.63	54.00
	COMMUNICATIONS										
NYS	AT&T (H)	T	43.88	43.88	0.00	0.00	93	1.32	3.01	44.88	32.88
NYS	BellSouth Corp. (H)	BLS	49.75	52.75	3.00	6.03	15	2.76	5.23	53.25	43.38
OTC	MCI	MCIC	32.25	33.75	1.50	4.65	16	0.10	0.30	36.13	25.25
NYS	Northern Telecom (L)	NT	37.00	34.88	-2.13	-5.74	18	0.36	1.03	49.25	33.75
NYS	Pacific Telesis	PAC	40.75	43.63	2.88	7.06	17	2.16	4.95	45.00	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	23
DECLINES	6
UNCHANGED	3
NEW HIGHS	4
NEW LOWS	10

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Motorola	$	9.00
SMALLEST DOLLAR LOSER	Symantec	$	-16.50
LARGEST PERCENTAGE GAINER	Informix		30.17 %
SMALLEST PERCENTAGE LOSER	Symantec		-44.00 %

	CLOSE 07/02/92	CLOSE 07/31/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3182.43	3367.19	184.76	5.81
DOW JONES INDUSTRIAL AVERAGE	3330.29	3393.78	63.49	1.91
STANDARD & POOR'S 500 STOCK INDE	411.77	424.21	12.44	3.02
N.Y.S.E. COMPOSITE	226.41	233.15	6.74	2.98
NASDAQ COMPOSITE	563.35	580.83	17.48	3.10

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
01/20/92	3961.41	3254.03
02/14/92	3984.10	3245.97
03/13/92	3888.19	3235.91
04/10/92	3566.89	3255.37
05/08/92	3642.36	3369.41
06/05/92	3562.74	3398.69
07/02/92	3182.43	3330.29
07/31/92	3367.19	3393.78

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- MS-DOS 5.0
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- 5-1/4' Floppy Drive (1.2 MB)
- 3-1/2' Floppy Drive (1.44 MB)
- Super VGA Card (1MB, VESA, 70Hz)
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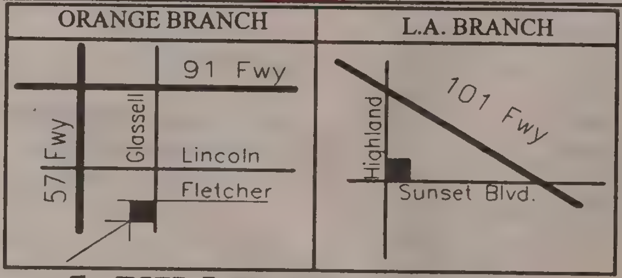

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Personal Computer-Assisted Political Action

Access Vs. Privacy Issues

BY JIM WARREN

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Warren founded InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics, and once chaired the College of Notre Dame-Belmont Mathematics Dept.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), sponsored by a dozen nonprofit civic, professional, and industry organizations; and received one of the first Electronic Frontier Foundation Pioneer Awards (1992). He is a member of the board of directors of Autodesk, Inc.

REALIZABLE FANTASIES

Personal computers are today's "Great Equalizers." Personal computers are irresistible weapons—when "loaded" with information—with which "armed" citizens can defend and enhance (and revive) the democratic processes of a free people.

Computers are power amplifiers. It's said that "Knowledge is power." But knowledge depends on information; information depends on structuring data and its relationships—and that's what computers do eminently well.

Thus, computers—with access to relevant information in digital form—empower their users. In the past, cost limited this power only to large corporations and government. Now, personal computers—plus low-cost digital information—are beginning to rectify that inequity.

Personal computer power is limited only by access to its ammunition—information. Access to political and governmental information empowers citizens to, once again, control their government.

CONTACTING DECISION-MAKERS

Lists of federal, state, county, city, and district decision-makers are increasingly available in machine-readable form—on diskettes, CD-ROMs, and from computer nets and BBSes (computer bulletin board systems); they're available from public agencies, nonprofit groups, and for-profit information duplicators. Lists may only provide decision-makers' names, addresses, political parties, and perhaps phone numbers. Or, providers may have "added value" by including committee memberships, group affiliations, areas of interest, publicly stated positions, etc.

This information was always public, but used to be much less accessible—functionally limiting its use only to lobbyists and the most diligent citizens. Personal computers and low-cost info-access are dissolving that barrier against "mere" citizens effectively participating in the political process.

Convenient computerized access helps identify supporters (and opponents), organize constituencies, and coordinate interaction, and permits timely, targeted communications—by computer-assisted mail, fax, and phone, and even computer-guided personal visits to identified key decision-makers.

Without easy public access to this information, part-time political action is random and ineffective; productive advocacy is functionally limited to full-time activists; and political power remains in the hands of professional lobbyists.

DECISION-MAKERS' PRIVACY

Some folks are proposing that all official information about the nation's most powerful decision-makers—even names and addresses—should be private (i.e. known only to special-interest groups that ferret out the information from other records). Although the decision-makers voluntarily sought their power to control our government and make its most important decisions, some want their privacy—no citizens' visits, phone calls, or even "junk" mail from community members concerned about their impending votes.

The nation's most powerful decision-makers are its registered voters.

VOTER REG RECORDS: POWERFUL PUBLIC DATA

Voter registration records contain at least name, legal address, and party affiliation (if any)—needed to identify legal voters, the jurisdictions in which they are entitled to vote, and parties in which they are entitled to participate. Registrations are public records—*those seeking to exercise political power are identifiable.*

In the past, computerized voter registration records were available only on 9-track magtape. Use was functionally limited to professional campaign managers—working for anyone who could afford them. Now, low-cost reg records are becoming available for micros—on diskettes or CD-ROMs.

Reg records can be examined. Anyone can examine the registrations—a powerful deterrent to voter fraud, such as multiple or fictitious registrants ("Vote early; vote often!"), graveyard voters (representing the spirits of the long-departed), etc. Some have suggested that only incumbent politicians should have access to voter records.

Reg records can be copied. As with other public records, anyone can obtain a copy of reg records—by hand, paper copy, or in computer form. *Use is legally limited only to election-related matters.*

WHO'S GOT THE POWER?

In the past, computerized records were available only on 9-track magtape. To process them, you needed a megamonster mainframe in the garage. Thus, use was functionally limited to professional campaign managers—working for anyone who could afford them. Successful candidates commonly rewarded their campaign managers with tax-paid staff "jobs"—public funds supporting them between elections.

Now, low-cost reg records are becoming available for micros—on diskettes or (instantly obsolete) CD-ROMs.

USING COMPUTERIZED VOTER REG RECORDS

Value-added extras from private-sector providers may include voter's phone, age or age-range, sex, census tract, GIS data (geographic information system), special processing software, etc. Records may also include voting history—who voted in which elections. This is valuable to poorer campaigns with limited resources, but also used by registrars—e.g., identifying registrants who may have moved and should be revalidated, providing another audit control against voter fraud, fascinating to match against death certificates, etc.

Users can create walking-order precinct lists for campaign volunteers, direct-mail address lists, carpool lists for election day, and many other campaign uses, including targeted opinion polling. (Sabotage political polling: *Lie!* Double your adverse impact with answers systematically opposite to your views.)

These computer files were also used by majority incumbents of both parties for gerrymandering in numerous states. (Computer-assisted gerrymandering is often called "burtonizing," after California's late Phil Burton—applauded and cursed for automating the most sophisticated block-by-block gerrymandering in the nation.)

ABOUT VOTERS' PRIVACY

Conflicts between personal privacy and public decision making raise numerous policy alternatives—each having significant ramifications for a democratic process.

•Should voter registration records be secret? For instance, California judges joined peace officers and successfully lobbied special treatment for themselves; permission to keep their registration data secret. However, harassed and abused spouses have no such protection, nor do child-support scofflaws, nor wealthy kidnap targets.

•Should voters be allowed to list (public) mailing addresses, but keep (different) residence addresses secret—except, perhaps, against judicial query?

•Should records be open for public review, but not for copying? Should citizens be prohibited from writing down addresses or party affiliations? Incumbents would love it.

•Should copying be limited to hand-copying or xerography or paper-only printouts—or should fast, nonpolluting, easy-to-use (and -abuse) computer copies also be available, as is so often advocated for other public records?

Perhaps the two most basic trade-offs:

•Regarding privacy: Is it more important that voters have privacy, or that those who want the power to make political decisions be identifiable—and verifiable?

•Regarding access: Is it more important that legal users—citizens desiring to exercise inexpensive-but-effective political advocacy—be able to do so, or that their legal speech be made ineffective to protect against (potential) illegal use, e.g. by direct-marketeers?

Democracy—and participation therein—is an inconvenience.

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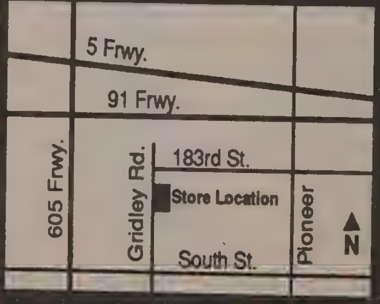

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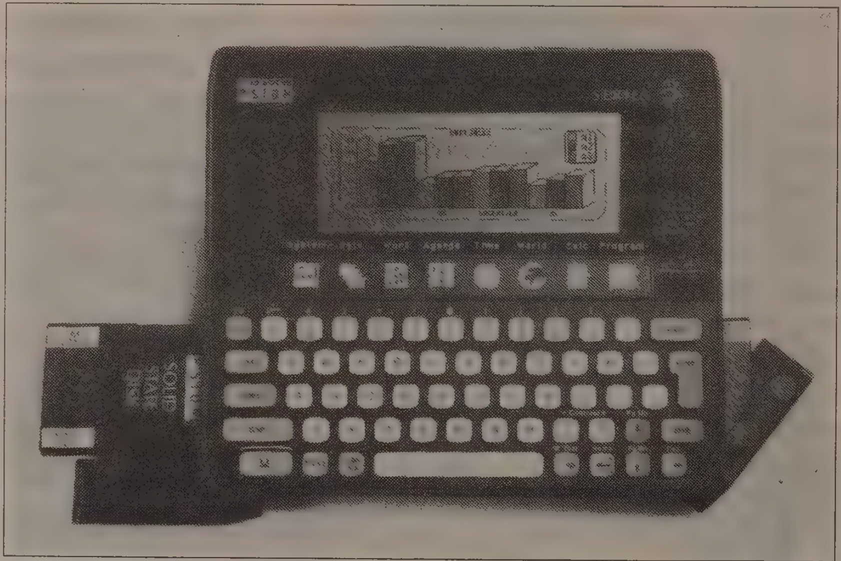
Psion UK has long been known for its Organizer series of palmtop computers; these machines have been very popular in the United Kingdom for some years now, and have been used by businesspeople and lawyers to organize their days. In their latest product offering, the Psion Organizer 3, the engineers at Psion have jumped to grab a leadership position in the emerging field of palmtop organizers by introducing one of the more powerful units now on the market.

The new $549 Psion is most remarkable for its styling, both in the exterior case and in the user-interface design. Closed, it measures a mere 6.5" x 3.3" x .9", smaller overall than the Sharp Wizard OZ-8000 series. The screen is a 240 x 80 dot bit-mapped display which is capable of about 10 lines by 40 characters across. This display is used to good effect with the Psion's proportional fonts, icons, and pop-up menus and dialog boxes, making the unit much easier to use than many of its competitors. Open, the Organizer 3 features a row of icon keys for quick access of the various features, and a QWERTY-layout keyboard.



The Psion Organizer 3 is one of the most powerful palmtops currently available.

The keyboard is, I believe, the Organizer 3's main drawback. Though the Psion is, in my opinion, about the ideal size for a palmtop, truly small enough to fit in a pocket without difficulty, this makes the keyboard a little cramped. In addition, the keyboard's "mushy" feel makes it difficult to determine by touch whether you've hit the key you intended; I found it difficult to type quickly with this keyboard. However, with some practice, I was able to type almost as quickly on this unit as I can type on my Sharp Wizard OZ-8000.

The Psion features a simple database, a word processor, a calendar/agenda, a local and world clock, a calculator, and even a built-in BASIC-like programming language. The word processor is really the Psion's standout feature; it can handle multiple fonts and styles, and can even print directly to a laser printer with the proper printer drivers installed. It is compatible with Microsoft Word.

The operating system also supports multitasking, no mean feat in such a small machine, and thus your programs can actually run in the background. For example, with the optional spreadsheet card, you can be editing your word processing document while you're doing a long background recalculation.

The PC link feature is also quite capable; though the user interface on the PC side is not quite as friendly, the splendid interface on the Psion side of things makes up for it. You can attach your remote PC to the Psion as though it were a "network drive"; the drives on the PC look like additional drives attached to the Psion, and you can peruse files, open them, and save information directly to the connected PC.

Unfortunately, installation of the software is a bit tricky, and not as straightforward as it should have been. A particular problem is that to install the word processor conversion software to allow the Psion word processor to communicate with other standard PC word processors, you must perform a rather complicated installation process, which is not documented very well. Once it's installed, however, it works like a charm.

The Psion has many nice touches. For example, while viewing a database entry, you can hit the "dial" key, and the unit will autodial the numbers for you (via the built-in speaker on the bottom of the unit). You need only hold the palmtop up to the phone and hit the appropriate key.

In a major improvement over what happens with some other organizers, every program on the Psion retains its internal state when you turn the unit off, so when you turn it back on (or switch between functions), you will be returned to exactly the same point you left off. Even if I start working on a spreadsheet (an optional add-in card), turn the unit off, remove the spreadsheet card, and turn the Psion back on, I can still choose the spreadsheet option and it will display the spreadsheet as I was last viewing it. If I try to edit it, I'll be prompted to insert the spreadsheet card, and once I've done that I can continue editing the spreadsheet.

Speaking of the optional $149.95 spreadsheet card: this is a full-function program capable of reading and writing Microsoft Excel and Lotus 1-2-3 file formats. Unfortunately it does not include a macro language, but it will preserve Lotus 1-2-3 macros and write them back out to the file (though you cannot use them while editing them in the Psion). The spreadsheet includes pull-down menus and even a graphing function. Due to the lack of macro support, it is not fully Excel or 1-2-3

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compatible, but in other respects it is quite full-featured.

The Psion 3 does not have many drawbacks, but there are some, in addition to the somewhat difficult-to-use keyboard. The card slots are not PCMCIA, which means the large numbers of PCMCIA cards and accessories currently becoming available will not be usable on the Psion. To balance this, however, Psion UK does indeed distribute a number of proprietary cards for its two slots, including Flash RAM cards up to 2MB, and various application cards ranging from chess to the spreadsheet card. (Flash RAM, as discussed in last month's column, acts like a high-speed virtual hard disk, retaining memory even when the unit is turned off.) In addition, since the Psion has a graphical user interface, these applications are generally easier to use than many of the DOS-based applications available for the other palmtops such as the $699 HP 95LX.

NEW HARDWARE

Gateway2000, famous for its low-cost, mail-order, PC clone hardware, has recently begun to ship the Gateway Handbook, a $1295 sub-subnotebook measuring 5.9" x 9" x 1.4", with a 286-level processor, 1MB of RAM, and a 40MB hard disk. This machine is more powerful than most of the other PC-compatible palmtops, though it sacrifices portability and battery life to make room for the hard disk. Nevertheless, it is a very portable unit, with full-size 640 x 400 CGA screen, a near-full-size QWERTY keyboard, and rechargeable batteries which last up to four hours per charge. This is a near-laptop power unit in a handheld-sized package. It does not have PCMCIA slots, however, though it does have a variety of expansion ports, including the ability to add a 3.5" floppy drive and a modem.

Zeos, another well-known mail-order PC clone manufacturer, has also introduced a $595 DOS-compatible palmtop they call the Pocket PC. This unit weighs in at a light 1.3 lbs., measuring 4" x 9" x .9". It comes with a V30 processor (a fast 8086 clone), 1MB of RAM, and 1.5MB of ROM (which consists of DOS 5.0 and a bundled copy of Microsoft Works). It includes two PCMCIA 1.0 slots. (Birrell Walsh will be doing an extended review of this unit in an upcoming issue of *MicroTimes.*)

PCMCIA CARDS

As I mentioned in last month's column, the standard for handheld computing device expansion is called PCMCIA (don't ask me what it stands for). There are two revisions of the standard, called 1.0 and 2.0. If your palmtop accepts PCMCIA 1.0 cards, that means it will accept most RAM and Flash RAM cards, most ROM application cards, and some modem cards. PCMCIA 2.0 is a full-fledged palmtop expansion bus, which can handle any kind of peripheral including micro hard disks and high-speed fax modems. Most current palmtop computers take PCMCIA 1.0 cards.

Meanwhile, the world of PCMCIA cards and peripherals marches on.

One interesting potential market for handheld devices is to use them as electronic books, like the Sony Data Discman. Distributing information on compact discs has a number of advantages, not the least of which is inexpensive mass production; the actual cost

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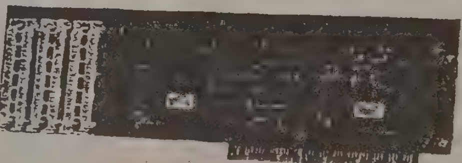

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of reproduction of a compact disc is under a few dollars per disc. However, palmtop computers can also be used as "electronic book readers" as well, with information being distributed via PCMCIA and other kinds of cards.

The difficulty with using IC cards to distribute information is cost. It is much more expensive to store large amounts of information on an IC card than it is on a compact disc. However, there are a number of advantages as well. First of all, IC cards offer much faster random access; all the information in a PCMCIA ROM card is, essentially, available instantly. In addition, there are no moving parts to a palmtop computer; your machine will not be subject to problems if you are using it in a rugged environment, in a bumpy train, etc. Solid-state ROM cards are smaller and also far less power-draining than the drive required to read a CD-ROM. However, something must be done to minimize the cost of this form of data distribution.

One way to deal with this issue is via compression. Stac Electronics, as mentioned in last month's column, has produced RAM cards with onboard on-the-fly compression. A company that specializes in compressing ROM cards is Microlytics, Inc., whose parent company, SelecTronics, is known for its pocket dictionaries, thesauruses, multilanguage translators, and so forth. They have a proprietary compression technology which is capable of much higher compression rates than most well-known compression algorithms are capable of. For example, they compressed their Word Finder Thesaurus a factor of thirty-five times, the Random House Encyclopedia a factor of 3.3 times, and so forth. This kind of compression technology holds the promise of being able to distribute a lot more information on these PCMCIA ROM cards than would otherwise be possible, keeping the costs down to the point where they could be quite affordable for the average consumer for many "electronic books." Currently, PCMCIA-based ROM cards can store as much as 64MB of uncompressed information on a single card.

Dr. Neuhaus (run by a Dr. Gottfried Neuhaus), a European manufacturer of telecommunications and semiconductor-based products, has announced the shipment of its Fury Card 2400 data/fax modem which will allow PCMCIA 2.0-compliant palmtops to have 2400 baud data with MNP 5 compression and 9600 baud fax communications capabilities, all on a single standard Type II PCMCIA card (i.e. 5mm thick).

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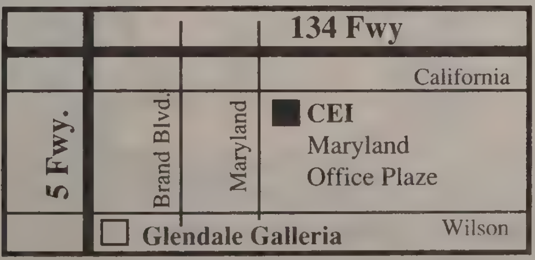

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MORE ON NEWTON

Since last month I've learned more about Apple's Newton, which is intended to sell for the revolutionary price of $1000, a breakthrough price for a full-power pen-based unit. If Apple makes its price point, it will be the first manufacturer to break the magic $1000 barrier for potential mass-market acceptance of a pen-based product.

Most current pen-based computers offer laptop-level power at a laptop-level price; this means they cost from $2000 on the low end (the PoqetPad from Fujitsu, formerly Poqet Computer) on up into the several-thousand-dollar range. As I mentioned last month, these machines are currently used primarily in vertical market applications, point-of-sale and data entry applications where keyboard input would be impractical or ineffective.

Because true pen-based applications often require more computational power than most inexpensive palmtop computers can offer, the penetration of the pen interface into their natural palmtop and subnotebook market has so far been rather small (despite the success of the Sony and other inexpensive palmtops in Japan). In addition, most of these "pentop" computers are often much larger and heavier than most palmtops, making them not much more portable than your average laptop, and therefore difficult to sell (why give up a keyboard if you're going to have to lug around a laptop-sized computer anyway?)

The PoqetPad from Fujitsu is the only true-full-power, handheld, pen-based machine currently shipping in the US; it retails for $1995 and weighs only 1.2lbs. The Newton, however, at its hypothetical $1000 price point, could potentially break the barrier of acceptance to pen-based mass-market consumer computing by introducing a powerful RISC-based machine with sophisticated software to the market. Whether Apple can actually make this target price has yet to be seen, but there is no question that the unit would be a very powerful one; the ARM 610 RISC processor at the heart of the Newton is reputed to have twice the processor power of a Mac IIfx. Interestingly, Apple has also signed an agreement with Sharp Corporation for the latter to distribute and sell a Newton-compatible unit in the United States.

Next month: More on the Apple Newton and more reviews of other currently shipping palmtop computers.■

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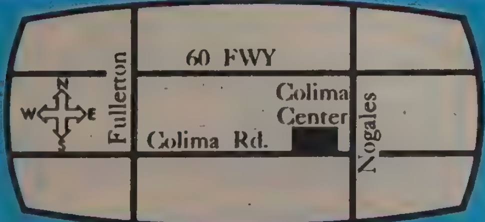

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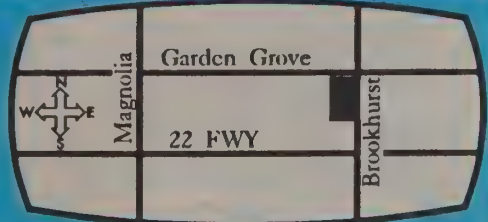

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GETTING AMERICA Online

An Interview With AOL President/CEO Steve Case

By Mary Eisenhart

Photos: Susana Millman

Founded in 1985 as Quantum Computer Services, America Online is, in some ways, a textbook example of the venture-capital-funded startup that makes good. Begun with a mixture of vision and pragmatism, it attracted such blue-ribbon investors as Hambrecht & Quist, Kleiner Perkins Caufield and Byers, and Citicorp. It differentiated itself from its competitors in key areas: a wide range of strategic alliances with partners including computer companies, software vendors, and print publishers; and massive investment in making the software easy to use for even the beginning computer user. Over a seven-year period it gradually developed into a successful national company and went public in a healthy stock offering in March.

Unlike its main competitors—CompuServe, a subsidiary of H & R Block; GEnie, a subsidiary of General Electric; and Prodigy, a joint venture of Sears and IBM—America Online has been an independent company from the beginning. Its success has been driven by its openness to outside partnerships and some aggressive marketing—whether you use a Mac or PC, the software and some initial connect time are free. If a prospective customer doesn't get the software through any of a number of bundling arrangements (with Tandy, IBM, and many other vendors), a phone call (1-800-827-6364) gets a disk and startup kit on their way.

Culturally, AOL walks some interesting lines. Its mass-market orientation causes it to have stricter rules for online conduct than you'll find on the Internet, say, but while there are system-wide policies against harassment and some of the more popular swear words in public areas, there is not Prodigy-style censorship. Last year, the system made headlines when it was discovered that some users were taking advantage of its sophisticated file transfer capability to distribute child pornography in electronic mail; President/CEO Steve Case issued a statement to the user base that struck a masterful balance among commitment to ECPA-mandated privacy, free speech, respect for customer sensibilities, and cooperation with law enforcement.

AOL is a serious business with plans for serious expansion. Its board of directors includes the likes of Kleiner Perkins partner Frank Caufield, Businessland president Harold Copperman, and former Secretary of State Alexander Haig. It is also home to nearly two hundred thousand users from children to grandparents (Seniornet, for example, recently migrated to AOL), who discuss topics including school, politics, software, pet care, sports, and rock 'n' roll. There's an area where Microsoft offers in-depth advice to small businesses, and a new service (a joint venture with the *Chicago Tribune*) called Chicago Online, where the locals and visitors discuss such topics as upcoming events and where to get the best Italian beef in town.

Steve Case was visiting the Bay Area in June, so, in a flurry of email, we arranged to meet and do this interview.

How did you happen to get involved in all this anyway?

I remember reading, I guess it must be twelve or thirteen years ago, Alvin Toffler's book *The Third Wave*. One of the concepts he developed was the concept of the global village, telecommunication bringing people together. And when I read it, I was

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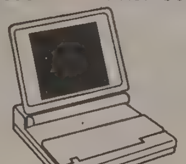

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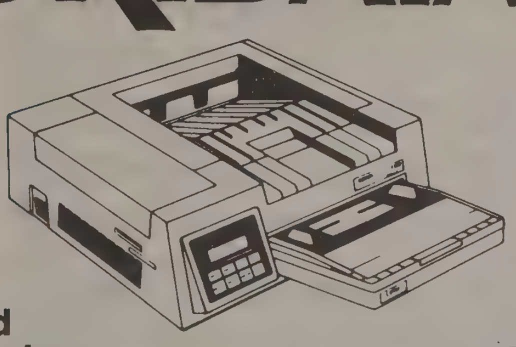

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I was very intrigued by it, but then I kind of went on and focused on more pragmatic things—I worked for Procter and Gamble for a while, and Pepsico for a while, in the early '80s.

Ten years ago, I bought a Kaypro CP/M computer. I bought it mostly out of curiosity, because I wanted to get into computing. But I also wanted to try out this concept of communications.

What transpired was a series of very time-consuming, very costly, very painful steps to get hooked up. I figured out that you needed this thing called a modem, and I spent a couple hundred dollars to buy it, and waited a month for it to arrive by mail, and then learned that it didn't work with the computer I had. So I had to buy another modem. And then I needed to buy communication software to make that modem work with my computer, when I finally got that.

It was very complicated to figure out how to make it work. And I sort of reviewed the services out there, and decided to subscribe to The Source. I waited a month to get that—I think it cost a hundred dollars up front to get it, and quite a bit per hour to use it. I finally figured out how to make that work, and got in and wandered around.

And although it was very painful and very time-consuming and very expensive, I thought it was really kind of magical that I was sitting in my room, which at the time was in Kansas, and I could connect to this service that connected me to the rest of the world. As a marketer, I said that if there was some way to fix this, to make it accessible to real people and affordable to real people, this could be a major new medium.

We started the company in 1985 with the belief that the consumer online service market had a lot of potential if you could combine a very easy-to-use service with affordable pricing, and partner with companies who already had the awareness to market. In 1985, Commodore was the dominant home computer, so that was a good place to start.

That's how the company got started. We convinced Commodore that there was an opportunity here; they agreed to market the Q-Link service to their customer base, so they would bundle our software with all their computers, all their modems.

As a result, we were able to get some venture capitalists interested in investing in the company.

Even at that stage?

Well, we couldn't have started the company without their investment. The requirements to start a consumer online service and do it right are certainly such that you can't bootstrap it. It requires some capital up front.

The venture capitalists believed there was a market, and because Commodore was going to help market it, we could get customers relatively efficiently, and we were off to the races.

For the first several years of the company's life, the only market we served were Commodore 64 owners. Then we started diversifying with the Apple II market, and a service we did with Tandy for their DeskMate interface, and Macintosh and so forth. But we built the company, really, starting with a focus on Commodore.

Considering how much money has been bled on failed online systems, what did the VCs find attractive about this service, as contrasted to all the other ones that belly-upped over the years?

My sense is that they thought the market could be huge, and that there was a role for an independent company to try to provide a highly accessible, highly affordable consumer service, and to market that in partnership with companies, like Commodore originally, and more recently Tandy and IBM and Microsoft and Claris and the *Chicago Tribune* and a growing list of people we're working with to build this market.

I think the fact that we had a strategy of segmenting the market, of not trying to be all things to all people, and partnering with companies that already had credibility in some of those markets, so that we could leverage the momentum they already had as opposed to having to create it from scratch, made them more comfortable that this was the kind of investment they could make, that they would be able to get a good return on.

> **Steve Case: "Some people look at the online market and say, 'It's been around for five or ten years and there's only a few million users.' I look at it and say, 'I'm astonished that there's a few million users, given how many obstacles we as an industry have put in front of real people to get on.'"**

If we had proposed being kind of a mass-market service, and we were going to try to compete with Prodigy and *Time* magazine and HBO and so forth, spending tens of millions of dollars to build awareness, they probably wouldn't have been as comfortable. In fact, we were a little bit more pragmatic and a little bit more focused, and had this philosophy that really is part of our culture: that the way to build this medium is to do it collectively in partnership with other companies, as opposed to trying to go it alone. I think that probably made them feel good about the investment.

What's the state of your relationship with Commodore at this point?

We don't have too much relationship with them. That's mostly a function of how the market has evolved. We still provide the Q-Link service, and it's actually still quite profitable for us. We have thousands of customers who are still using it happily, and we'll continue to provide it, but obviously Commodore has not been selling the Commodore 64 computers for many years now; their focus has been on the Amiga. And we just made a strategic decision a few years ago that we were not going to provide a service for the Amiga. Not because it wasn't a good computer—it was, but we just felt the market opportunities were greater focusing on Macintosh and DOS and some of the other areas.

They've always been supportive—without their help, we could never have started the company. So we're certainly appreciative. They're focused more and more on Amiga and more and more on Europe, and we're focused on the consumer market in the United States, so over time we've moved in different directions.

You went public not too long ago. To what extent are your original investors still involved, and what doors got opened by going public?

Most of the original venture capital investors are still involved. I think they still believe that there's a long way to go in terms of meeting our ultimate objectives, and in most cases they want to hang in there for the ride.

The major change since we've been public is one of the reasons we decided to go public. We felt that since one of our core strategies was to establish alliances with a lot of different companies in a lot of different industries, by being public we'd be more visible and more credible.

That has happened. There have been a number of companies that have come out of the woodwork wanting to work with us, and some other companies that we had been talking to that are suddenly more enthusiastic about working with us, because we are more visible in the market, and they can understand the momentum we're making, and that we're going to be around for a while. So it's definitely been a beneficial process.

We also were pleasantly surprised that Wall Street, for the most part, understood what we were doing, and the market we were trying to develop, and really got excited about it. Since there had been so many failures in the consumer online services market in the 1980s, and a lot of publishers lost a lot of money, we were concerned, when we were headed down the path of going public, that Wall Street would just say, "Oh, here we go again."

And what we found was that a lot of things had changed, and the market had developed to the point where it was reasonably sized—according to Link Resources, already a $400 million market—and there's several million people using these services. So it's a reasonably sized credible market.

Yet at the same time, only 3% of households in the United States use these services, and 97% don't, so it's a big market with tremendous growth potential. I think they felt that the dynamics were now right in terms of the marketplace, and that we had a good strategy to participate in that marketplace.

When you say you want to "do it right," what does that mean to you?

It's a lot of things. When we first entered the market in the mid-'80s, almost all the services that were targeting consumers were too hard to use, and too

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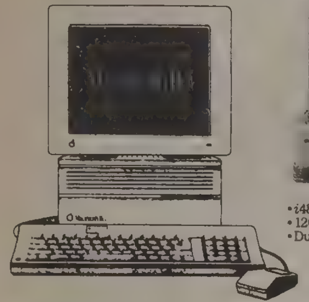

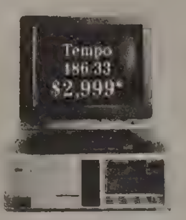

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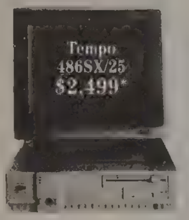

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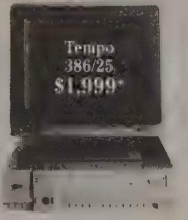

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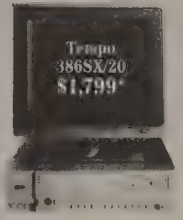

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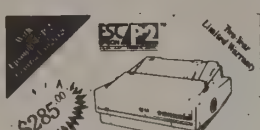

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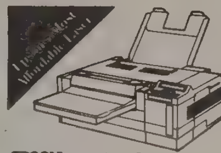

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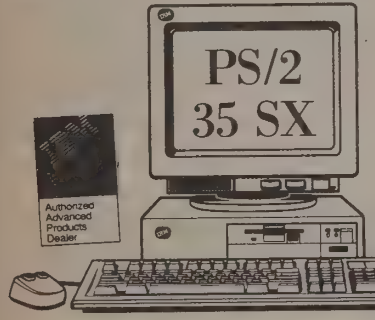

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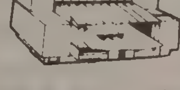

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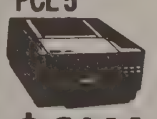

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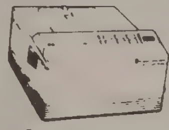

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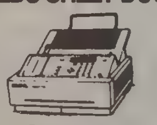

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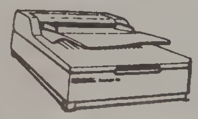

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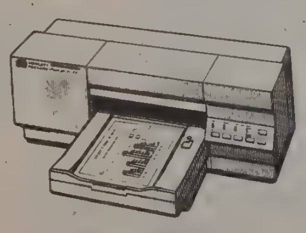

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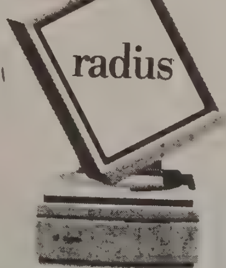

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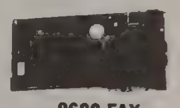

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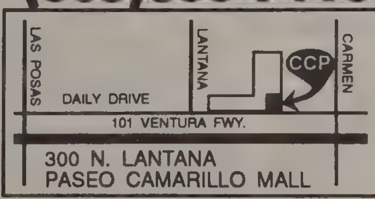

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expensive, and not a very relevant mix of services for most consumers.

We said, "If we're going to break this open and have it be a broader medium, we've got to address those problems. It's got to be easy and fun to use, and it's got to have service content that real people find value in, and it's got to be something that people can afford."

So we made a significant investment up front in technology. We were the first company to offer a front-end software interface to our service, actually. Back in the mid-'80s, everything was ASCII text, very simple interfaces, so we spent a lot of money developing that technology. Now more and more people are also going in that direction, graphical user interfaces and so forth, but that's a key part of making online services accessible to the masses: making it something that is intuitive, that somebody could sit down in front of, and it won't take very long to figure out how to get in and get around.

What kind of services did you offer on Q-Link in the early days?

It was a pretty broad mix. The focus was on computing support—we knew that obviously people have a computer, they have an interest in computing, so that's an obvious first thing to target, in terms of forums to discuss different aspects of computing, and software libraries that you can download from and take better advantage of the computer you've got.

We also felt that in the Commodore market games were important, so we did a number of multiplayer games. Some ourselves, some with companies like Lucasfilm—we developed games with them to try and serve that kind of multiplayer gaming market with a nice graphical interface.

And we had what we called People Connection, which was this interactive communications capability where people all around the country could exchange ideas pretty much any time of the day.

There was also the usual slew of transactional services and information services and education services, but the focus was really much more on interactive communications. That's really always been our focus. We think the real magic of this new medium is the interactive communications capability. It's people participating in it, in sort of an electronic community, not reading the news off the screen. There's some value in things like news, but there's greater value in getting people to participate in more of an active medium, as opposed to just watching what's scrolling by.

Getting Seniornet was pretty much of a coup. How did you do that?

I think they had an interest in figuring out how to scale their service so they could support a larger base of customers. One of the problems they found was the same thing we saw when we first started the company, which was that in order to attract a broad base of customers, particularly people who tended to be novice computer users, it had to be very easy to use. I think they looked around and felt that our service was the best in terms of ease of use. We started having some discussions with them, and they decided that it made sense to join forces.

I think it was driven by our philosophy, in terms

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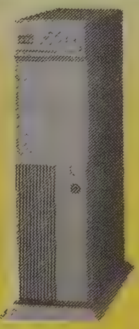

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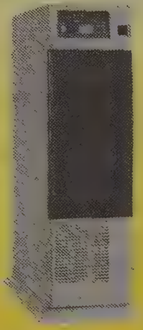

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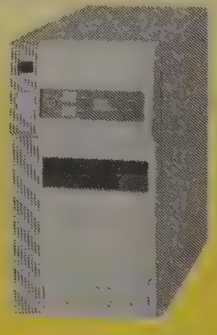

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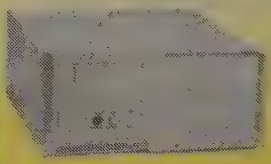

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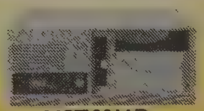

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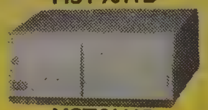

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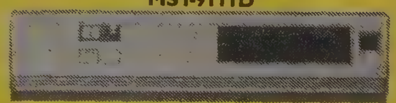

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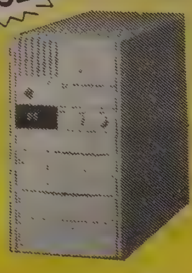

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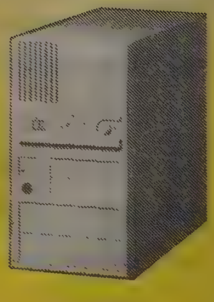

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of focusing on the consumer market; the investments we've made to make the services easy to use and visually appealing were the kinds of things they felt were appropriate, in fact they *required*, if they were to track the broader base of seniors, many of whom are not too comfortable with computers. If they're going to participate, it's got to be simple and fun.

Commercially, where do you think the online business is going, and what are the obstacles keeping it from getting there?

The market trends are pretty clear and pretty encouraging. Most computers now sold in the consumer market have built-in modems, and three years ago none of them did, which was one of the major barriers. A few years ago, you had to buy a computer and figure out how to make that work, buy a modem and figure out how to plug it in and make that work, buy some communications software and figure out how to make that work, and subscribe to some service and figure out how that worked. Particularly since different services usually worked differently, it was very, very difficult.

> **"We think the real magic of this new medium is the interactive communications capability. It's people participating in it, in sort of an electronic community, not reading the news off the screen."**

If any two of them had the same command set, you'd fall down dead from the shock.

Absolutely. Some people look at the online market and say, "It's been around for five or ten years and there's only a few million users." I look at it and say, "I'm astonished that there's a few million users, given how many obstacles we as an industry have put in front of real people to get on."

So the first step, in terms of making it a mass medium, is accessibility. Making it easy to get in, easy to get around. To the extent that the computers or palmtops or screen-based telephones or what have you are designed so it's very simple to get into these services, that will be one of the major kinds of requirements to make it into a mass market.

And then it's having a set of services that are relevant to specific groups of people, so there's a reason to get in on a kind of habitual basis. We think that partners like the *Chicago Tribune* help provide that within their particular markets.

Why is the *Tribune* interested in this, and what's in it for them?

They clearly are viewed as the leading source of information in Chicago. In addition to owning the *Tribune*, they own one of the major radio stations, one of the major television stations, the Chicago Cubs... They really own Chicago, and are really respected in Chicago, and we think that by working with them we can really create some content for the Chicago market that will provide reasons for people to get in on a habitual basis.

And then we can marry that information with what we do pretty well, which is interactive communications capability, trying to create electronic communities, so that people in Chicago, instead of just reading the newspaper kind of passively, can interact with it, find out more information, discuss things with reporters, debate topics with fellow readers. It's that marriage of information and interactivity on a platform that is accessible and affordable that we think will really drive this into being a mass market.

How does the *Tribune* plan to deal with the interactive stuff? Somebody in one of the folders was saying, "Okay, when does Mike Royko get online so we can hassle him about his column?"

I think it'll vary. I think, like anything else, it'll take a while before it really develops. I don't know exactly what the status of Mike Royko is, but my guess is he's not the most computer-friendly guy in the world and probably would not be one of the first to get online to participate.

It'll probably be the junior reporters right out of college.

Yeah. What typically happens, whether you're working with a software company or a computer company or a magazine or a newspaper or what have you, is that very quickly there are a few evangelists who surface, who really believe in this and do what it takes to make it happen, in terms of building the interactivity and building the community.

I actually think the *Tribune* has been unusually creative in thinking about this new technology, and they fully understand the interactive communications side of it. They're not like some of the newspapers in the 1980s, just trying to throw up some news and position this as in any way a replacement for a traditional newspaper. It's a supplement to a newspaper, where you can get additional information, where you can interact and exchange ideas. It takes a newspaper one step further. I've been impressed with how quickly they've come to that realization.

Obviously our commitment is to build local editions in most of the major markets, in cooperation with, hopefully, the major newspapers in each of those markets. So what we're trying to do in Chicago is prove that the concept works, and then start rolling it out in other cities. We believe that we'll have partnerships with lots of newspapers and lots of markets, all working together to try to build this new medium.

One issue that arises is ads. We're a print publication; we live off of our ads. They're a print publication; they live off of their ads. Content is, essentially, subsidized by advertising. How do you see this

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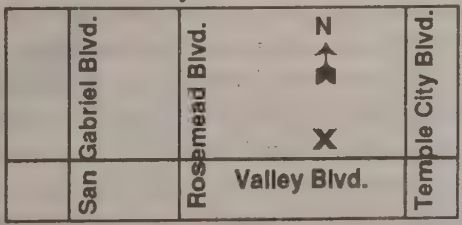

making a transition into the online universe? How is advertising going to kick in?

Well, it's unclear. I think the first step is building a critical mass. Nobody really is too interested in advertising unless there's a good reach in terms of the customer base. I'm not sure we're there yet.

To the extent that we have lots of people online, we probably will develop a number of different ways for advertisers to communicate with our members, but we'll do it in a manner that is consistent with the kind of atmosphere we've tried to create online.

Clearly there are a lot of people who like Prodigy, and they've obviously been very successful, but there a lot of people also who don't like the fact that there are these intrusive ads at the bottom of their screen. So we're less likely to go in that direction, perhaps more likely to go in the direction of asking people what their interests are. To the extent that there's somebody who wants to deliver a message to you based on those interests, maybe we'll provide a mechanism to do it. But it'll be more based on what you want to find out about, as opposed to being kind of intrusive.

But the bottom line is that it's not a high priority for us right now. Our focus is really on building the membership and working with a lot of partners to do that. To the extent that we're successful at building critical mass on a national scale, there should be some additional opportunities that we could pursue that would benefit customers as well. Obviously if we developed additional sources of revenue, that will allow us to be more aggressive in terms of how we price the service, because some of it will be paid for by somebody other than the customer. But you're not going to see anything from us in the next couple of years in the advertising camp. We'll let Prodigy experiment there.

So, for somebody like the *Tribune* , what is the economic advantage at this point in doing a venture like this? Foot in the door?

Well, I think it's more than that. Certainly there's a strategic imperative of trying to position themselves as being the primary source of information in their market, and embracing new technologies if those are ways to better deliver information to their customers.

Companies like the *Tribune* are looking at online services, they're looking at fax, they're looking at audiotext, as ways to provide information to their customers. That's number one—newspapers in just about every market have had flat circulation for the past couple decades.

What's essentially happened is that the younger people, sort of the computer generation, are the ones least likely to read newspapers. Which suggests that if you're running a newspaper, you'd better come up with some compelling ways to meet the information needs of those people, and you'd better be embracing some of the new technologies that those people are starting to embrace.

And of course it's pure strategic imperative. Any newspaper that sort of sits on the sidelines and believes that down the road they're going to deliver the newspaper as it's currently designed to people ten or twenty years from now is just being naive.

Beyond the strategic side, there is a financial reason to do it. The *Tribune* shares in the revenue generated by their customers; they get a greater share if they actually did the marketing to attract the customer. So they get some revenue based on the usage of their area, and they get some revenue based on the usage of the customers they generate. They did believe, and we believe, that down the road there may be some additional sources of revenue, such as through advertising. But the focus is on building the product, attracting the customer base, and then we'll look at some ways to improve the economics, whether it be through advertising or other kinds of opportunities.

Do you think newspapers as we know them will cease to exist, or will they exist as they are now and be a completely different universe from what's online?

They certainly will not cease to exist. New technologies rarely replace old technologies, they generally take them in new directions. Television didn't kill radio, it just redefined radio.

The same thing is true here. There is a fairly vigorous debate going on within the newspaper industry in terms of how to evolve the newspaper, but I think everybody acknowledges that some evolution is going to be required. We don't presume to know the newspaper industry well enough to know which is the right path, but certainly trying different approaches will lead to a better product than they currently have.

> **"New technologies rarely replace old technologies, they generally take them in new directions. Television didn't kill radio, it just redefined radio. The same thing is true here."**

One of the directions that more newspapers are pursuing is thinking of the newspaper as the summary, or the main menu, which will allow you to get more detailed information on topics you have a particular interest in through new technology. So you could find out, at sort of a top-line level, what's going on—if you really had a keen interest in a particular topic, then you could get more information, either online or through fax or audiotext or what have you.

With regard to Judge Green and the Baby Bells, do you think that the phone companies will get into this business over the proverbial dead bodies of the newspaper companies?

I certainly think the phone companies will get into this business. When they get into it, how they get into it, who they're partnering with, are the questions that nobody at this point really has the answers to.

Our belief is that the phone companies will move into this area with some caution, trying to figure out how to add value to the existing products out there, as opposed to starting from scratch, and they'll be looking for alliances with a variety of companies, including newspapers.

To the extent that they eventually play a role, it will be by facilitating development of the medium and by working with a lot of different partners, as opposed to trying to go off and do it themselves.

That said, I think there's enough uncertainty in terms of when and how they can play—there's obviously several bills in Congress now that are trying to restrict the phone companies' involvement. I think most of the phone companies right now have a wait-and-see attitude, wanting to see where this settles out before they make any major commitments.

So we don't see, in the next couple of years, any meaningful role in the marketplace for the phone-company kind of services, but down the road, if you look out five or ten years from now, we do think they will play a role.

Do you have an opinion as to whether it's a good thing or a bad thing for the phone companies to be in the content business as contrasted to the carrier business? Some people hold that there should be essentially a firewall between the two businesses, and have good solid arguments for that.

It's hard to say. We're certainly familiar with both the arguments. I think newspapers are going to be better at the content side than telephone companies, and telephone companies are going to be better at the transmission/conduit side than newspapers.

And even if people are able to do something, that doesn't mean that they can or will do it well. There are a lot of companies that are able to provide online services. In the 1980s, there were dozens of ventures that were started to do just that, and virtually all of them were not successful. It was mostly just a matter of trying to understand where their core competencies were, and in some cases they were in over their heads.

I don't think that telephone companies will be particularly adept at managing this interactive communications component of the service that we call online communities. That's something that I think a lot of the big companies, particularly the phone companies, view as a kind of anarchy. It's not something they can control, and it's troubling to them. They'd much rather have a situation where people are dialing in to get electronic Yellow Pages, or to get some news online from a very carefully edited and organized news service, as opposed to creating a platform for people to exchange ideas.

So my sense is that probably to the extent they get in at all, they'll focus on information services, perhaps even more a business focus than a consumer focus, and let other companies who focus on the communications side take the lead.

Going back to Prodigy, you've said that there is a significant overlap between your user base and the Prodigy user base, and that you advertise America Online on Prodigy. How do you differentiate what you do from what Prodigy does?

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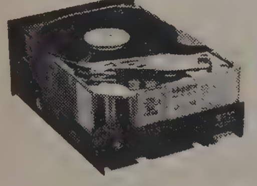

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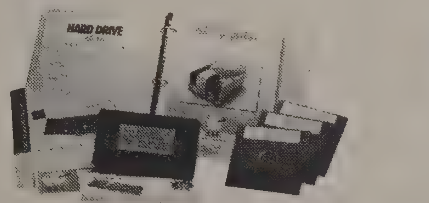

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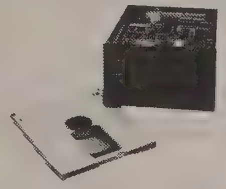

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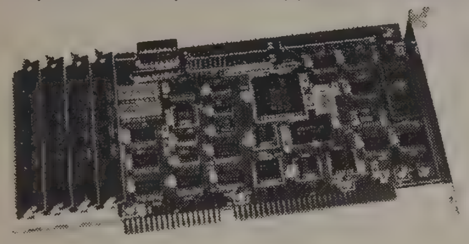

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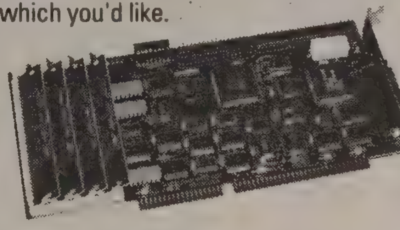

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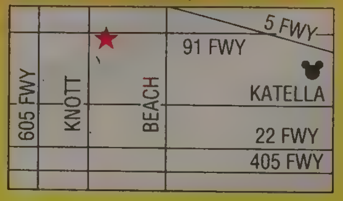

It's a little bit like any medium—there's always an expectation among some observers that one size will fit all needs, and it almost never is the case. People subscribe to dozens of different magazines and watch dozens of different cable television channels. There's not this sort of winner-takes-all mentality in any media business.

And the reason for that seems pretty clear—nobody can meet the needs of everybody all the time, and it's better to focus on areas where you can add value. We think the area we're particularly good at is this interactive communications capability, creating these electronic communities, whether it be in partnership with newspapers or magazines, or with associations.

We think what Prodigy's been particularly effective at is creating a platform for direct marketing, and that's one of the key drivers of their business. That just is a different kind of business than what we're trying to do. They're much more interested in transactional services like home banking, and we don't provide those at all. We're interested in communications, so we provide capabilities like real-time conferencing, which they don't provide at all. It's just got a different flavor to it, a different personality, and some people will find value in one, some people will find value in the other, and a lot of people will find value in both.

One of the things that Prodigy has acquired a certain amount of notoriety for is that they're very stringent about what you can and can't post, and indeed your postings go through an editor before someone decides whether they go up or not.

This is not what happens on America Online, but on the other hand AOL has stronger online conduct policies than, say, The WELL or the net. What's the thinking behind all that?

Well, to some extent Prodigy, I think, has been unfairly attacked because of some of their policies. I think most of what happened is that the whole interactive communications area caught them by surprise. It was not part of their business plan; they were expecting this to be an information and transactional service. They threw up a few message boards just for the heck of it, they created an email facility just because somebody thought that might be nice, and suddenly people wanted to *use* it.

They really didn't have the functionality that probably was necessary, and they really had not thought through some of the policy issues that relate to interactive communications, and it just took them a while to wrestle with those issues. And they are complicated issues.

I think now, actually, their policies are a lot more reasonable than they were in the past. They are posting a lot more of the messages that before they would have censored.

We prefer having a more open system and trusting the judgment of our customers, so we do have a little bit different philosophy in terms of what is permissible than they have. I think they've made a lot of improvement in the last couple of years over when they originally started, and I give them a lot of credit for that.

And on the other hand, on America Online you can get your postings nuked for having one of the Seven

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How do you balance the interests of people who want to discuss their sex lives with the fact that somebody's five-year-old is going to log on?

We just try to be reasonable. People have a tendency, because it's in an electronic medium, to think this somehow requires rethinking the way society should work.

And in most cases, the way society works works reasonably well. We're just trying to leverage some of those concepts and bring them into the electronic world.

Clearly community standards are what drives the judgment calls in most areas around the country, and that's the same kind of thing we try to do here. Trying, to the best of our abilities, to understand what the expectations of our members are, and try to have a policy that's reasonably consistent that reflects the desires of our customers.

To a large extent, these kinds of issues are a little bit overblown. The vast majority of the usage of our service, and other services like ours, is in areas where this is not an issue at all. It's really more the exceptions that get the attention. I think for the most part people think we're doing a pretty good job of moderating how the service works and being reasonably balanced in terms of the judgment calls we make. But nobody's perfect.

A while ago in the Grateful Dead area we had a situation where a passing flamer came along and used the f-word and had his response removed. It was interesting to compare the people in that group with their counterparts on The WELL. The people on The WELL would uniformly have raised holy hell whether they agreed with the response or not. Its removal would have been such a hot button that everything would have ground to a screeching halt until that was dealt with.

With this group, it was about half and half. There were a lot of people who said, "This is totally unacceptable and we can't have it." And there was a whole other group of people who said, "Later for this, where's the setlist?" It's interesting dealing with different customer bases, and how to tailor things to different customer bases.

Right, and that's one of the issues we wrestle with. America Online is not one big generic service, it's a lot of clusters of services. It consists of dozens of electronic communities, and each of them is a little bit different in terms of their requirements. What we're trying to do is recognize some of the differentiation among some of these communities, while at the same time having policies that are reasonably consistent.

It would be really confusing to people if something was tolerated one place and wasn't tolerated the other place. And on the other hand, you don't want to err on the side of having a policy that's sort of the lowest common denominator.

A system-wide K–12 standard...

No, we don't want that. We think that that's a little more of what Prodigy's trying to do, and we think that's fine for them, but it's not what we're trying to do.

We want a communication system that is tolerant of different viewpoints, that doesn't mind controversy—even if the controversy is about ourselves, which is often the case. We want to get people to be active participants, and we're willing to take the risks that some of that entails.

As time goes on, do you see things being available on the service like video and stuff like that? Not simply as downloads, but interactive video?

Sure. If you look down the road five years or so, certainly the communications infrastructure will be in place to support higher-bandwidth communications cost-effectively, and that will allow us to do some things that just aren't practical today to make the service even more visually rich and compelling.

That said, there's still an awful lot that can be done with the current technology. When you're looking at new emerging markets, people are always looking at the next thing as being the answer. And we think the answer lies within what's already on the table, with computers that exist today and modems that exist today, just trying to make it as accessible as we can and bring as many partners to the table as we can, providing content and helping to build awareness for America Online. We think that's the challenge of the next few years, to do a better job of leveraging what's already there, and not counting on some things that aren't yet built.

We continue to rely on desktop PCs as the way people access online services, and that's fine. The good news there is that more and more PCs are being sold in the home market, and more and more of those PCs have built-in modems. And many of them have our software, and Prodigy and other software, preinstalled on the hard drive, so it really becomes a matter of "take your computer home, plug one cord into the wall to get the power, the other cord into the wall to get the phone connection, and click something on the screen," and you're off and running.

So the barriers to trial have greatly diminished versus a few years ago, and that's great. And that market will continue to grow rapidly and be the principal driver for the online services market.

But beyond that, I think there's tremendous potential in terms of continuing to improve the accessibility and providing other ways for people to access services like America Online. We see the computer markets and the consumer electronics markets kind of converging, and beyond the desktop PC there seem to be three major new market segments that are on the verge of being developed. The first is palmtops, the second is interactive television, and the third is screen-based telephones.

We're looking at all of them. We think that palm-

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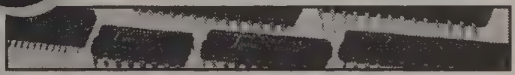

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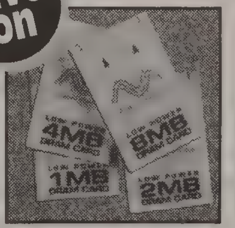

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tops essentially are the consumerization of personal computing into highly affordable, highly accessible, highly mobile kinds of access devices, where you really could carry in your pocket a device that makes it fairly easy for you to send mail, for example, or get your stock quotes. It could be an important way for people who are currently not comfortable with computers to connect to these kinds of services.

Screen-based telephones are the same kind of thing. AT&T and Northern Telecom and other companies are working on taking a computer and a phone and merging them together so you have a smart telephone with a good display that would allow people to access these services as well.

Television is the third area. A number of companies are working on ways to provide computer technology in television, which again could be an important way to deliver the kind of services we're providing.

All three of them are ways that people who currently are not comfortable with a desktop personal computer—and millions of people are not comfortable with desktop computers—can participate in these kinds of online services. Seniornet, for example, is a group of people that has a driving interest in communicating and sharing information, but right now one of the barriers is that you have to own a desktop computer to participate. If they could access those services through a simple telephone or a palmtop device, millions of additional people would suddenly be interested in this online medium.

Is it a matter of waiting for standards to emerge before you can build anything useful?

Well, there's some of that, certainly. Because there are now interesting new market opportunities, there are now lots of different companies chasing those, and coming up with lots of different interesting, but usually incompatible, ways to meet those needs.

We're looking at the various options. We're likely to put our toe in the water sooner rather than later in trying to understand how these new kinds of products could broaden the online medium. But certainly, in order to make a major commitment to it, it's going to require some coalescing of the different alternatives so it's clear what platforms we should be betting on.

Do you think Newton is a likely contender for that?

I think it's certainly a contender for that. On the palmtop side, the two major contenders at this point seem to be Newton and what Tandy is doing in conjunction with Casio and GeoWorks and Palm Computing. I think the Tandy-Casio venture is probably more likely to focus on the mass consumer market, with highly inexpensive devices.

GameBoys for telecomm.

Sort of, yeah. Or Sharp Wizards On Steroids is the other way people look at it.

I think Newton is initially going to focus on a higher-end part of the market. But the interesting thing about both approaches is that they have the desire to move those technologies into other kinds of devices. Apple's already made it clear that Newton is a technology, not a product, and that they hope Newton technology will one day be in screen-based telephones and televisions and other kinds of devices. If they're successful in doing that, it obviously becomes a more interesting platform for America Online than if it's a dedicated notepad device.

But overall, our objective of growing a mass medium and mass electronic communities is going to be fueled by the development of different ways for people to access these services, whether it's Newton or Tandy and Casio or AT&T's Smart Phone or any of the other kinds of things that are starting to come out, that are encouraging developments because they take the computing capabilities and extend the reach of them into the mass market. And we'll be there with services that people will enjoy using and will be able to afford using and won't have a lot of trouble using.

How significant do you think wireless in general is going to be?

I think it'll be very significant as it relates to things like palmtops. That's certainly one of the key areas where they can add value, through wireless connectivity.

It's not likely to play much of a role in the next few years, particularly in the consumer market, because the standards aren't clear and the prices of those wireless services are still fairly high.

But the dream of having a device that you can carry with you, that will fit in your pocket, that any time you receive email it automatically displays on your screen, any time you want to send a message to somebody you just type it in and push a button, whether you're on a boat or on a plane or in the office—clearly we're moving quickly to that goal, and a lot of companies are coming up with some very innovative solutions to meet that need. So now it's no longer a dream, it's just a matter of making those technologies affordable and accessible to the masses. And we're not too many years away from that outcome now.

I was reading someplace that your pricing structure is different for PC and Mac. This was news to me, because I've always used the Mac software since the beta test days.

What it really is is part of our attempt to create a broader number of customers subscribing to America Online. We were always looking at all the different aspects that might contribute to growing the membership base faster, and one that certainly impacts it is pricing.

So what we've been doing, for the last couple of years, is constantly testing different pricing options to try to understand what customers prefer. Our intent is to have one price that everybody pays, but like a lot of direct marketing companies, we do try to understand what customers really prefer by testing it out in the marketplace.

Most magazines, for example, have lots of different prices you pay depending on how you subscribe and when you subscribe and so forth. They're not doing that to confuse people, they're doing that to come up with the optimum way to price their magazine. We're really trying to do the same kind of thing. We want to get feedback from customers to help us make those decisions, as opposed to try to do them in a vacuum.

When people use multiple computers, they can still share the same America Online account. Whatever you start with, we'll continue to honor that. We're not forcing somebody into some different pricing structure.

It's probably just motivated by the desire to make things simple and affordable. For example, in the Macintosh world we have a pricing structure that charges more if you get on during the day than if you get on at night, and the reason for that is our costs during the day are quite a bit higher. But one of the things we wanted to test out was whether, if we had a flat rate twenty-four hours a day, that would be simpler and therefore more appealing to consumers, and that's what we're trying to find out.

Other than numbers, did you notice any cultural shifts when the PC people got on? I noticed that there was a lot more foot traffic all of a sudden!

Well, before, what we were doing was running separate services for separate platforms, so the Macintosh service was separate from the PC-Link service, and so on. We felt that was appropriate for several years, because part of our positioning in the marketplace was trying to create services that met the needs of each of the different computer segments we were going after, and we felt that a Commodore 64 owner had somewhat different interests from a PC compatible owner or a Macintosh owner.

Over the last year that's blurred, and we felt it was more appropriate to bring them together into one larger electronic community. So that's what we did—we interconnected our PC-Link service with our America Online service. There obviously was some social change, because suddenly there were twice as many people participating in the same areas, and a lot of the people were kind of new to the neighborhood. It took a couple of months of people getting used to it, but it seems to be working pretty well now.

Things like the Microsoft Small Business Forum are dual-platform things?

Right. And really, that's the direction we're going in. The services we're adding, like Chicago Online, are accessible to all the different people who are members of America Online.

We just don't think it's appropriate any more to segment based on what kind of computer you own. There are certainly some differences between a typical Macintosh owner and a typical PC compatible owner, but they're much fewer than they were five years ago. People are people, and we're trying to create electronic communities to meet their needs, whether it be business interests or career interests or hobbies or what have you. And in those areas people care less about what kind of computer you own than what kind of interests you share.

One of your stated goals is to have the best software libraries of any system around. How does that work?

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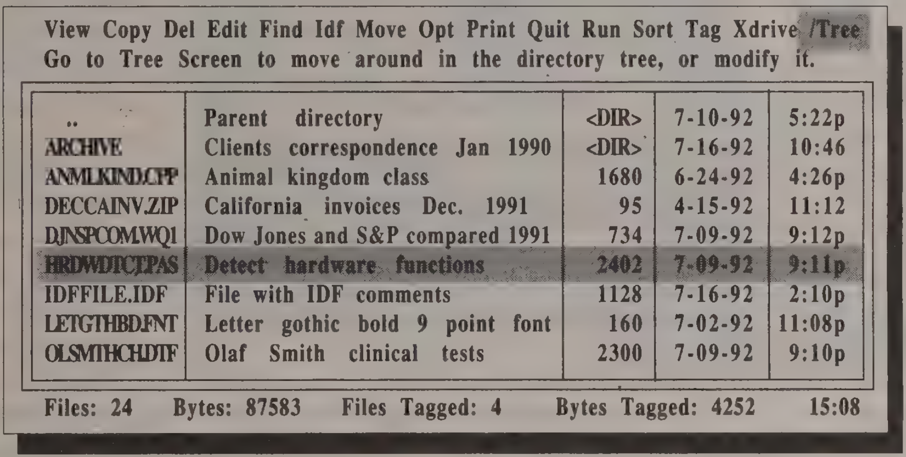

```
View Copy Del Edit Find Idf Move Opt Print Quit Run Sort Tag Xdrive /Tree
Go to Tree Screen to move around in the directory tree, or modify it.

 ..            Parent directory                <DIR>   7-10-92   5:22p
 ARCHIVE       Clients correspondence Jan 1990 <DIR>   7-16-92  10:46
 ANMLKIND.CPP  Animal kingdom class             1680   6-24-92   4:26p
 DECCAINV.ZIP  California invoices Dec. 1991      95   4-15-92  11:12
 DJNSPCOM.WQ1  Dow Jones and S&P compared 1991   734   7-09-92   9:12p
 HRDWDTCT.PAS  Detect hardware functions        2402   7-09-92   9:11p
 IDFFILE.IDF   File with IDF comments           1128   7-16-92   2:10p
 LETGTHBD.FNT  Letter gothic bold 9 point font   160   7-02-92  11:08p
 OLSMITHCH.DIF Olaf Smith clinical tests        2300   7-09-92   9:10p

Files: 24   Bytes: 87583   Files Tagged: 4   Bytes Tagged: 4252   15:08
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On the PC and Mac services, each of them, there are more than twenty thousand software files now, on a wide variety of topics ranging from business templates to games to graphic programs and so forth. We think we'll continue to grow that, based on members submitting new and interesting programs.

The second comes from publishers. We now have one hundred software publishers, including Microsoft and Word Perfect and Claris, providing support online, and just answering questions from users. They also generally have software libraries so people can download the recent updates and templates and so forth. We expect that to continue to grow as well, as we add additional publishers.

I've noticed quite a discrepancy in how plugged into this various vendors are. Some are quite responsive; with others, I've sent support questions a month ago and still haven't heard back.

That's not good. I'd like to know exactly who they are so we can follow up on it.

But the main issue there is getting companies to view online support as an integral part of the way they serve their customers, as opposed to sort of an afterthought. And it is kind of a cultural change for some of the companies—it just takes a while for them to understand it.

The companies that have been doing it for a while understand that it's really a powerful way to provide better support to customers more cost-effectively, because you create this environment where your customers are helping each other. It's sort of self-sufficient support—somebody posts a question, and some other user of the product actually answers it often before the company itself gets to it. So it's a very powerful way to provide better support less expensively, and more and more companies recognize that. There are certainly some that are just trying it out for the first time and don't really have the commitment to it that they will over time. We just think that the situation will continue to improve as more companies do it and understand the value of doing it.

Out here there's a service just starting up called AMIX. There's apparently been a lot of interest from software companies about using it as an upgrade delivery mechanism, because you can just download the upgrade, pay the fee to AMIX, and AMIX pays the vendor, and all this is much simpler than the usual song-and-dance. Do you envision doing anything similar?

Well, sure. We actually do that now, we typically just don't charge for the upgrade. It would be relatively easy for us to add a mechanism so that when you download a program, you're charged a certain amount for it. The capability to download upgrades exists now; the ability to charge for it doesn't.

It's certainly something we could do relatively easily. But we've always been a little bit tentative in positioning the service as a way to electronically distribute software, because electronic distribution of software is a concept that's been talked about now for ten years, and generally hasn't taken hold.

Part of the reason is that the traditional distributors and retailers of software aren't really keen on the idea of building a mechanism to bypass them. And a lot of companies have been reluctant to use the medium for electronic distribution because it essentially cuts their existing retail partners out of the loop.

So that's why we haven't done it. It's not a technology question, it's really more a business question. We'll see how AMIX does in that area—my guess is that it will require building a lot more critical mass of people who are subscribing to the service before it becomes interesting for most of the publishers to do it that way. Because it's a business issue and not a technology issue, to the extent that it becomes something that people are comfortable using, it would be relatively easy for America Online to provide that as well.

"Prodigy has been unfairly attacked because of some of their policies. I think most of what happened is that the whole interactive communications area caught them by surprise."

One of the interesting dynamics to watch will be what happens as communications becomes an integral part of computing. Certainly for the first ten years of personal computing modems and communications have been positioned as a peripheral part of computing—you go to a computer store and go to the Peripherals section to get your modem, which essentially has defined it as being a nonessential part of the computing experience.

That is definitely changing. Now 100% of the IBM PS/1 computers have modems, about 90% of the Packard-Bell computers have modems, quite a number of the Tandy computers and computers from other vendors have modems. Suddenly that's changing the way software companies think about providing support, and the way they think about providing upgrades.

Because if they could count on the fact that most, if not all, of their customers have a communications capability, that would dramatically shape the way they think about communicating with their customers and the way they think about updating their software programs. For example, it would be more likely that they would follow the path we follow—we tend to add new services and features every week. In a sense we're upgrading our program constantly.

Software companies could do the same thing, so that instead of waiting a year to get some fix or to get some additional enhancement, they could just offer it to people as soon as it's ready. The reason they don't do that now is because there's not enough people using modems among their customers to do that as a way of meeting the needs of the bulk of their customers.

Do you have any sense of what other systems your users use, and what percentage of them only use AOL?

We do have that information. When people first sign on, we ask them some of those kinds of questions.

What we generally find is that about half of our members are using some other service, and it typically is one of the other major national services such as Prodigy or CompuServe. Which sort of supports the point that we've always believed, that different services meet different needs, and that it's unlikely, as this market develops, that people are going to just subscribe to one service.

When I use CompuServe, I sort of feel like I'm walking into the library, which has the benefit of a broad array of information services, really very powerful depth that certainly we don't have and Prodigy doesn't have. But at the same time it's got sort of an intimidating atmosphere, in terms of the interface and pricing and so forth. It's powerful content that's a little hard to get to, and somewhat expensive.

And when I walk into Prodigy, I feel like I've walked into a shopping mall where there's a lot of merchandising activity going on, and some social gatherings on Saturday mornings and so forth.

And when I walk into America Online, I feel more like part of a community, with different areas of the service sharing ideas and interests and so forth.

So they all have a little bit different feel to them, a little different personality. You might find a lot of value in participating in America Online, whether it be the Microsoft Small Business Center or Rocklink or what have you, and then go to CompuServe to get some fairly detailed business information, and perhaps go to Prodigy to do some of the transactional kinds of services that they do well. It's unrealistic, given the potential of the market and the current size of the market, for any one service to do everything and do it effectively.

So do you see the online world getting more diverse as time goes on? Do you see more new services springing up, or the existing ones just getting more broad-based?

I think it'll be both. Certainly as the market develops, there will be a proliferation of specialized services. I think you're starting to see some of that now. At the same time, I think it's the kind of market that critical mass is important—the value of a communication service is typically in direct proportion to the number of people using it—it's better to have a forum where there's thousands of people participating than to have one where there's dozens of people participating.

As a result, I think the big services will get bigger,

continued on page 112

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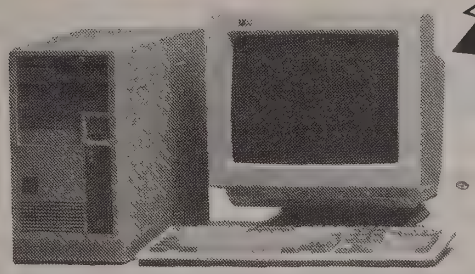

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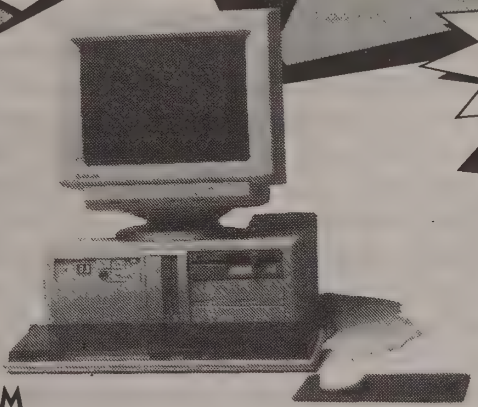

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Times Of Chaos And Opportunity

Veteran VC William Davidow On Riding The Wave Of The Future

BY MARY EISENHART

At the recent Mobile '92 conference, entrepreneurs, executives, analysts, and venture capitalists were struggling to understand—and take advantage of—a veritable explosion of technological breakthroughs. Newton was demonstrated. Publishing executives rhapsodized about the fortunes to be made in satellite-transmitted downloadable books. A host of wireless, pocket-sized, and pen-based gizmos found a receptive audience of would-be users and investors. Panelists speculated for days as to the direction of all this technology until one forthright soul pointed out that if anybody *knew* where it was going, they wouldn't be on a panel discussing it, they'd be keeping their mouths shut and doing a startup.

Indeed, as another panelist noted, the present convergence of various technologies is creating a climate analogous to that of the personal computer industry in 1979—great risk and great opportunity.

Veteran venture capitalist William Davidow, who chaired one of the panels, agrees with this assessment. As one who started making private investments in the '60s and eventually joined Mohr, Davidow Ventures in 1985, he has had occasion to observe the ups and downs of the industry—and figure out effective investment strategies.

Mohr, Davidow, he explains, specializes in "West Coast, early-stage technology companies in the electronics, computer, and software area, the medical device and medical instrument area, and occasionally a deal in the pharmaceutical area." Its partners have strong backgrounds in these areas—Davidow himself is an Intel veteran, and therefore "initially a lot of the deals I saw were in the semiconductor area, but we tend to do less investing there, just because the area's matured. We're constantly having to retool ourselves. I'm moving more into the software and information content businesses."

What sort of early-stage investments would his firm consider attractive in these volatile times? "Early stage to us usually means anywhere from an idea on the back of a napkin to fairly early in the life of the company. We tend not to invest in something if it has a $20 million valuation or more, and we usually like to invest in things that have less than $10 million valuations.

"I can tell you what we always look for, but we never find it. What you'd like to find is a great idea in an area in which you have expertise, with a management team that is highly motivated. What you typically find are deals in the area in which you have expertise, with either management teams with no ideas, or ideas with no management. Or something in between. The problem becomes one of how much risk you want to take. Those are very much judgment calls.

"It's awfully hard to bet on something without somebody who has a vision he wants to make come true. Whether he's a good manager or not. And the risk you run into is that if he has that vision, and you hire a good manager, that that manager kills the vision. We've had that happen."

Davidow stresses the importance, for VCs and entrepreneurs alike, of experience and of learning from it, of the day-in, day-out attention to the details. "Even though I would like to say that this is a field of individual stars, where one of you goes out and finds a phenomenally successful company, and everybody goes home and retires on the proceeds of your one great investment, the truth of the matter is that a lot of value is created over time by the processes that you put in place, and the things you do to make the star investments succeed."

The cliché version of the venture capital strategy goes something like this: entrepreneur has idea, needs money; venture capitalist invests money; company forms, product is developed and is runaway success; company goes public at satisfyingly high price, enriching its founders and investors. In fact, says Davidow, life is a good deal more complex, and involves a high degree of knowing what you're dealing with.

"There are products, there are businesses, and there are institutions. Say I create the world's best widget—maybe I'm better off just selling the product or the technology to somebody else, because I don't have enough management there to move it ahead, or the market is such that I don't want to build up all the infrastructure.

"Or maybe I could create a business out of that. So I move ahead and I start manufacturing, and I create that product and I create another product and I end up with a personnel organization—and so it grows to be a business, but it doesn't have the ability to really sustain itself.

"The wonderful thing about a Hewlett-Packard or an Intel was that ultimately things got institutionalized to the point where the company was able to maintain itself in some way. You've created, then, something of real value as a result of this.

"To me, the ultimate goal of venture capital is to make a good return for your investors through creating institutions, but there are very few institutions that ever get created. It doesn't have to be an Intel, but it's got to be a company that is capable of sustaining itself, holding its employees, holding its customers, growing over an extended period of time. Dealing with changes in the market.

"Our investors give us money to earn money. You take some of these businesses, and maybe the best thing from your investors' point of view is to create a public company for them. I think that's fine, but I think that there are inherent risks in doing that, in the sense that they're so one-dimensional. They're extremely vulnerable.

"I would far rather, to the degree possible, create institutions. It's just very difficult to do that. Very few of the investments that come along have the potential to become institutions. If all you did was try to start companies that were fairly certain to become institutions, you wouldn't start any companies. And you would probably miss a few that would become institutions in the process."

He emphasizes that venture capitalists who deal with startup companies are operating from assumptions fundamentally different from those of large companies like IBM or Apple. Those companies are in a position where they can and should invest heavily in developing promising technologies—in the certain knowledge that there will be failures, and big ones. Without the Lisa, there would be no Macintosh, and so it goes. But startups rarely survive long enough to learn from their Lisa-equivalents—we're unlikely to see a New Improved Momenta any time soon.

"If I were a venture capitalist and you told me, 'We'd like to start a company, and we're going to spend $10 million developing the first product, and the probability is 20% that that's going to be successful.

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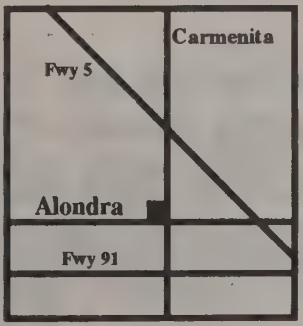

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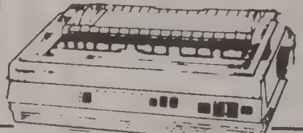

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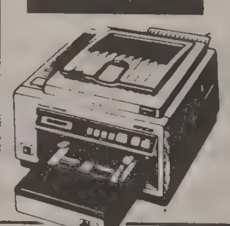

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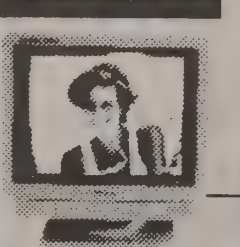

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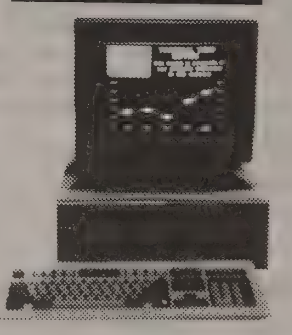

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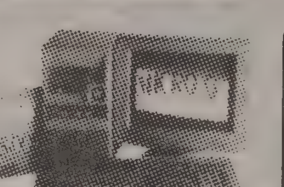

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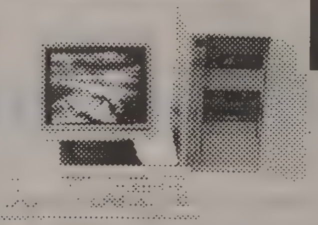

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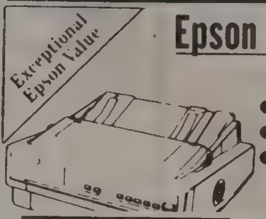

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Then we're going to spend another $10–20 million developing the *right* product'—I'd say, 'It's going to take you two years to develop the first product, a year to learn something from it, and two years to develop the next product. So that's five years. Then you're going to need a lot more money. So that probably isn't the right kind of venture investment for me to make.'

"On the other hand, if there were three software guys in a garage who came to me and said, 'Look, we've got this idea; it's going to be fundamentally very important. We'd like $200,000 a year to work on it for a couple of years. We're going to track the market. Then when the trend really becomes obvious we're going to pour on the coal and do something'—that is a more reasonable type of investment for a venture company to make."

In the times of chaos and opportunity, Davidow says, there are sure to be many casualties; for every Sun and Compaq, there will be dozens of Seeqs and Gavilans and Cromemcos.

> **William Davidow: "One of the good things about this society, one of the reasons it's so dynamic, is that it's driven to do things before it should do them."**

"It's part of this creative process. It is absolutely avoidable. [But] is the society capable of avoiding it? The answer is no. One of the good things about this society, one of the reasons it's so dynamic, is that it's driven to do things before it *should* do them.

"We were the area that got into the microwave business early, the electronic instrument business early, defense electronics early; and then we got into minicomputers and disk drives and semiconductors and software and bioengineering and things like that. Look at the industrial diversity that was created in this area. The personal computer business, the workstation business.

"One of the sad things is that some of these things have gone away, but there was this tremendous creative process that kept introducing new things into our lives. That wouldn't have happened without the Cromemcos." (Mohr, Davidow Ventures, 415/854-7236) ■

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Dun & Bradstreet Seeks Infotech Investments

D&B Enterprises President Dennis Sisco On Creating The Best Of Both Worlds

BY MARY EISENHART

For quite some time, Dun & Bradstreet has been in the information business, and has grown and prospered through decades of changes in markets and technologies. As part of its strategy, it has its own venture capital firm, D&B Enterprises, specifically created to fund emerging businesses in the information industry—"to provide," as president Dennis Sisco explains, "Dun & Bradstreet with some fundamentally new tools for innovation in new markets."

Sisco, who's been successful in both the venture capital and entrepreneurial sides of the business, explains that the firm takes a very broad view of the concept of "information" when it looks for investment possibilities.

"Our Holy Grail would be the next great database for the twenty-first century, in the sense of content, since Dun & Bradstreet, historically, is an information content company. But that's only a small part of what we're doing. Our specific charter is to find the ways for the Dun & Bradstreet Corporation to identify high-growth, high-promise market areas, and find ways to engage with the fast-growing entrepreneurial firms that tend to populate those market spaces—without putting those companies in a $4.5 billion bear hug and squeezing all the fun and growth out of them, which is what big companies typically do when they get engaged with small companies." D&B's current investments range from Geographic Information Systems software, electronic data interchange, CD-ROM technology, and a company that specializes in earthquake risk assessment software for insurance companies.

"We have a very broad view of the marketplace," says Sisco. "We're looking for companies whose products and services reach into every nook and cranny of the information technology world. Data management products are equally important to us as data content products. Information products that support information processing and the distribution of data are very important to us. Networking innovations, operating system innovations—we have a great interest in software that will make the ability to do truly distributed information processing and retrieval a reality."

While D&B likes to invest at an early stage of the company's evolution, and prefers to be the lead investor or share that role with one other firm, it is most attracted by companies past their infancy—those with a product either fully developed and shipping, or at least well along the development cycle. This, however, is not carved in stone. Says Sisco, "We are interested in getting involved with companies as early as helping to formulate the business premise, through very late-stage established companies. The investment interest we have ranges all the way from seed financing to buy-out financing."

While it might be expected that a venture firm that's a subsidiary of a multibillion-dollar corporation might have the primary goal of bringing its portfolio companies under the parental umbrella, this is only one of several strategies for D&B. Sisco explains, "It really is going to be a function of the company, the marketplace that it's in, and the conditions over time. We want to let the marketplace speak. We don't, for instance, go in with requirements for options down the line, or we don't try to get entrepreneurs to agree up front that they will sell to us and only us down the line.

"We're very flexible, and I think as we look at the portfolio, five or ten years from now, we'll find a representation of situations where companies have gone public, where they've been sold wholly or partially to other companies, and where Dun & Bradstreet has either made significant additional investment or has bought the companies outright. It really is a function of what makes sense for the combination of the venture fund and the management of the company."

So, as "information" grows to cover everything from academic courseware to consumer entertainment to sober business databases to flashy multimedia, what sort of content is D&B looking for in its info-investments?

"We don't really care," answers Sisco. "The specific content of the information product is a lot less important to us than the quality of the management team behind the business idea, and the robustness and growth profile for the marketplace it's serving."

And how should the entrepreneur who thinks D&B is just the place to go money-shopping approach the firm?

"Once they have their thoughts organized and can articulate what they want to do, the best thing to do is to pick up the telephone and approach us directly. We work very hard to put into practice the premise that our success is built on being able to understand good ideas, and we work hard not to stifle good ideas prematurely.

"There are a couple of real turnoffs for us, and I would imagine we're not very dissimilar from many other investors in this respect. It's not a good idea to approach us through brokers or third parties or slick business-plan writers. We put a high premium on what the entrepreneur thinks about, as far as his business idea and his marketplace, and his resourcefulness in bringing that to fruition. There certainly is nothing wrong with getting some expert advice and getting some help in complementing those areas where an entrepeneur might not be totally comfortable, like putting a plan together, and doing market analysis and that sort of thing, but still we're a lot more comfortable with those management teams that speak for themselves, as opposed to speaking through third parties.

"Also—this is a conclusion I've drawn over the last twenty-five years, being on all sides of this table multiple times—it's very difficult to deal with entrepreneurial teams who put the control issue right out in front of everything else. Where the first, and every nth word in the discussion, is 'I need to maintain control of my firm.' Because from our point of view, control is a secondary issue to building a successful business that serves its customers, grows at or ahead of the pace of its market, and creates wealth for its founders and its investors and its employees.

"We have no set requirements in terms of what percentage of the equity is purchased for any particular investment—that's a function of what stage the firm is at, what the risk-reward profile of the business proposition is, how much confidence you can have in the ability of the firm's management to bring off the plan, and that sort of thing.

"With regard to management, if we're dealing in a seed environment—if we're dealing with a technical entrepreneur who recognizes that he or she needs complementary skills, we're very good at helping to bring all of those skills together and get a team together. And on the other hand, that's hard work—we

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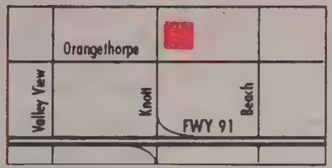

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much prefer to deal with quality managment teams that don't need any changes.

"So from our point of view, if management changes turn out to be necessary over the course of an investment, we sort of feel like maybe we didn't do as good a job up front as we might have. It's definitely not our style to want to bring in new management."

And, Sisco stresses, D&B places a lot of emphasis on the value-added it offers *after* the investment. "We work very, very hard, once the investments are made, to try to build profitable relationships between portfolio companies and Dun & Bradstreet operating units. These relationships can range from something as straightforward as our scouting up significant customer opportunities—Dun & Bradstreet spends many hundreds of millions of dollars a year on information technology products—to some where we have joint marketing relationships between portfolio companies and Dun & Bradstreet units, that have resulted in totally new products that neither company would have successfully launched without the other.

"All of this is done in an environment where the entrepreneurial team operates as an independent business, without any of the sort of bogeymen that entrepreneurs normally associate with large companies—no corporate controls, no financial quantoids breathing down their necks all the time. They deal in a venture investment environment.

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Dennis Sisco: "All of this is done in an environment where the entrepreneurial team operates as an independent business, without any of the sort of bogeymen that entrepreneurs normally associate with large companies—no corporate controls, no financial quantoids breathing down their necks all the time."

"We do feel that we've taken an innovative approach to bringing the benefits of having one of the best names on the globe in information products and information technologies on your side, and blending that with the highly flexible sort of hundred-percent-market-driven approach that you get when you get venture investments." (D&B Enterprises, 203/761-6101) ■

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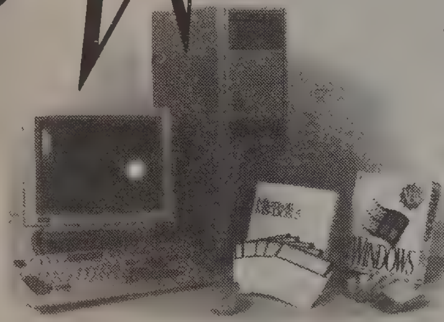

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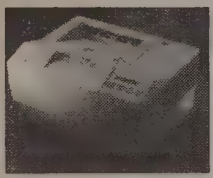

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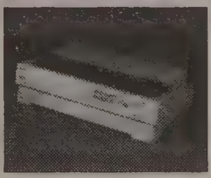

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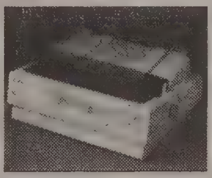

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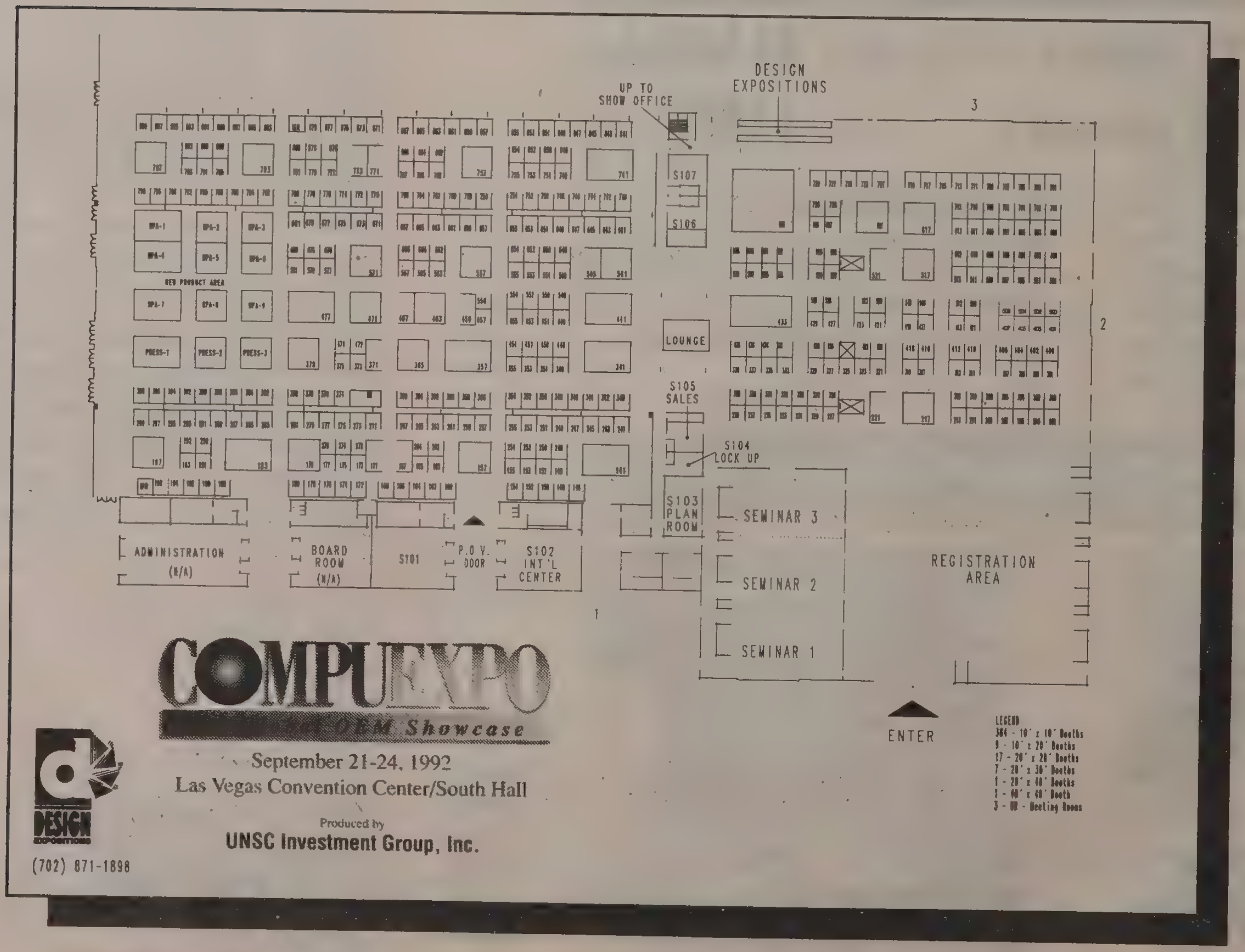
Monday, September 21

- 9:30–10:00 am
  Keynote Speaker
  Gordon Campbell
  CEO, Chips & Technologies
- 10:30–11:30 am
  Compatible PCs For The Next Ten Years: Non-Intel CPUs Come Of Age
  Product families: Chips & Technologies, Intel, Cyrix, AMD, Nexgen
  Chair: Joseph Bentzel, Leapfrog Marketing
- 1:30–2:30 pm
  Marketing PCs In A Commodity/Price War Environment
  Chair: Johnathan Cohler, Computer Buying World
- 3:00–4:00 pm
  Build Or Buy—Resellers Look At The New "OEM" Environment
  Chair: Tony Strattner, Reseller Management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Tuesday, September 22

- 9:30–10:00 am
  Keynote Speaker: Lucy Baney, Vice President, Software Systems Market Development, IBM
- 10:30–11:30 am
  The Notebook Revolution
  Chair: Phil Lemmons, PC World
- 1:30–2:30 pm
  Creating Company & Brand Identity In A Crowded Marketplace
  Chair: Brian Jaffe, Ziff-Davis
- 3:00–4:00 pm
  Channel Strategies For Technology Entrepreneurs
  Chair: TBA

Wednesday, September 23

- 9:30–10:00 am
  Keynote Speaker: Richard Fade, Director Of Far East OEM Sales, Microsoft
- 10:30–11:30 am
  Beyond The Windows PC: Alternative Operating Environments
  Chair: Mary Eisenhart, MicroTimes
- 1:30–2:30 pm
  Emerging Technologies For The Next Ten Years
  Chair: George Bond, Computer Buying World
- 3:00–4:00 pm
  FCC Regulations And Compliance With Federal Agencies
  Chair: Michael A. Gbadebo, Rockford Engineering

Thursday, September 24

- 9:15–9:45 am
  Keynote Speaker: TBA
- 10:00–10:30 am
  Technology Trade And Marketing Between The USA And Hungary
  Speaker: Andy Hadju, Control Inc.
- 10:45–11:15 am
  Technology Trade And Marketing Between The USA And Russia
  Speaker: Tamirlan I. Gasanov, Russian Chamber Of Businessmen
- 11:30 am–12:00 noon
  Technology Trade And Marketing Between The USA And China
  Speaker: TBA

continued on page 126

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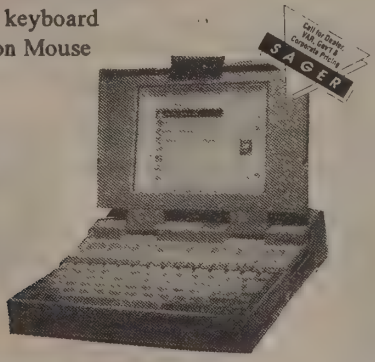

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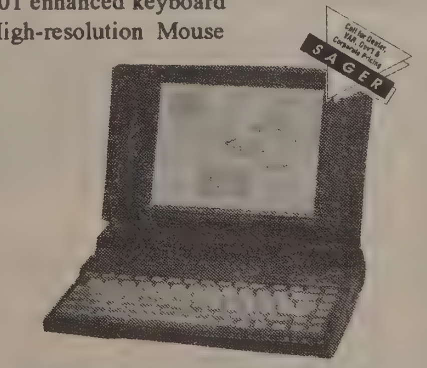

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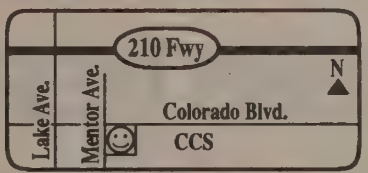

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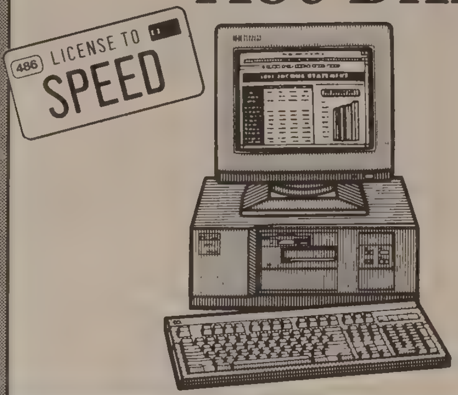

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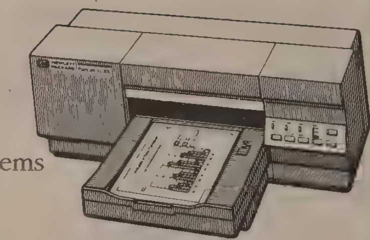

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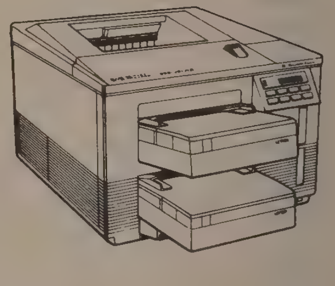

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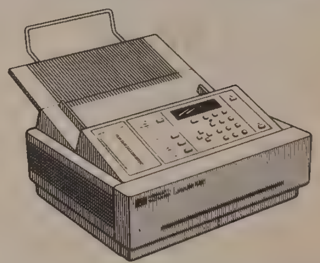

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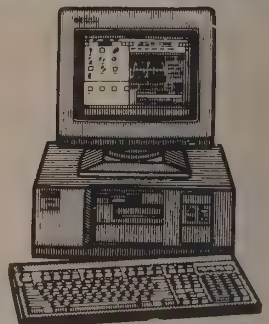

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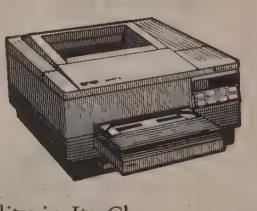

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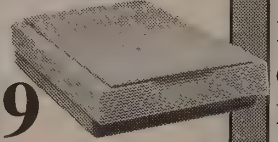

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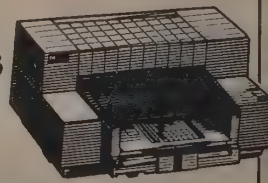

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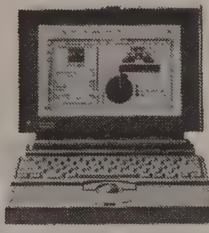

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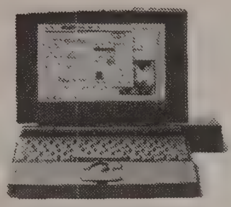

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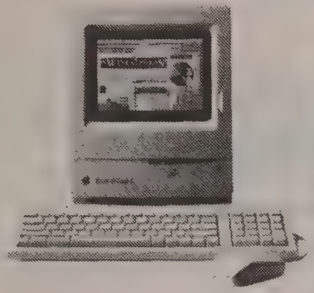

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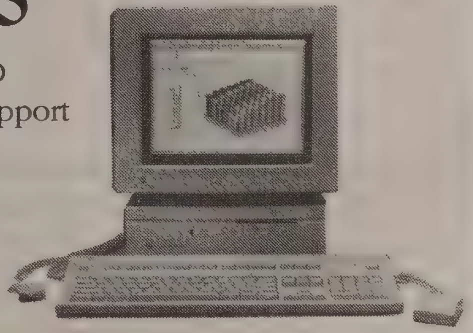

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Amiga users have several networking options, including a slow but inexpensive method that uses the parallel port. In fact, many people connect CDTV units to their Amigas in this manner.

However, since December 1991, through a special licensing agreement with Novell, Oxxi Inc. has been shipping Amiga Client Software (ACS), which brings the de facto PC standard, Novell NetWare, and access to the largest installed base of networks to the Amiga. Amiga computers can now connect as clients on Novell networks, providing the ability to easily share files with both MS-DOS and Macintosh computers.

NETWARE WITH AMIGA ENHANCEMENTS

At Oxxi's Long Beach headquarters, its president, John Houston, gave me a tour of the ACS product, using an Amiga 3000 connected to several PC fileservers.

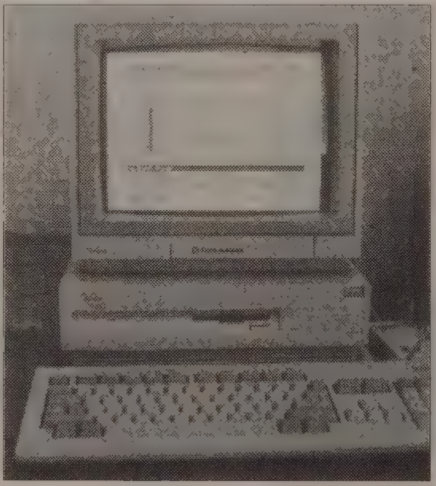
Though based on specifications provided by Novell, the ACS code was written from the ground up for the Amiga. All of the program screens have the AmigaDOS 2.0 look, with pop-up windows that explode—*a la* Mac—onto the screen. (ACS runs under either AmigaDOS 1.3 or 2.0.)

Despite the appearance of the screen, users familiar with the various MS-DOS network administration programs will feel right at home with the Amiga counterparts. For example, Oxxi has gone to great lengths to keep keystroke compatibility and to make the Amiga versions function as closely as possible to the MS-DOS versions, adding features only when there was a clear need.

However, the advantages of the Amiga's graphical user interface cannot be overlooked. Where in the MS-DOS version you might have to press the cursor key several times before the proper menu item is highlighted, the Amiga version requires a simple click on the item. ACS is a full implementation of NetWare, and includes functions such as file management and security, printer definition, print-job control, network accounting, password security, and login script definitions.

To log onto the network using an Amiga, you click on the appropriately named icon, Login. A window will appear, and you'll see the login script execute. This is nearly exactly what you would see if you logged in using an MS-DOS machine.

> **Using Amiga Client Software, Amiga computers can now connect as clients on Novell networks, providing the ability to easily share files with both MS-DOS and Macintosh computers.**



One difference between the two platforms is that the DOS Capture command has no counterpart on the Amiga. Basically, MS-DOS computers need the Capture command because most programs cannot print directly to the network printer port. Capture is a memory-resident program that redirects program output to the network printer port.

On the Amiga, printer settings are handled through the Amiga preference settings. Normally, you can only select parallel or serial for the printer port, but Oxxi provides a modification that adds a network item to the printer port selection.

A very nice feature is ACS's ability to reset all preferences on the fly. In addition to printer selection, preferences also cover things like mouse pointer design, workbench colors, etc. Every person who logs in can have different Amiga preferences, without rebooting the machine.

Oxxi has significantly improved the Novell messaging system. Messages are basically single-line notes that are sent to other network stations. On the PC side, messages are normally sent using either the Session utility or the Send command. The Send command is executed at a DOS prompt and is very limited, since you must know the exact name of the station or group you're sending the message to. The Session utility allows you to select the destination using a menu. The receiving station displays the message at the bottom of the screen. At this point, the computer locks up until you press Control-Enter, which clears the message.

On the Amiga, a special message program sleeps on the Workbench. If a message is sent to your station, the task wakes up and shows you the message, along with the time it was sent. A running list of all of the messages received is saved in its message window. This window automatically resizes when you drag the screen up or down, another interesting trick which I hadn't seen before.

If you need to reply to the last message, you simply enter your reply message into the input gadget and select Reply from the pull-down menu. As with the PC Session utility, you can also select the destination of your message using menus. Of course, received messages don't lock up the Amiga, since the operating system is multitasking.

Normally, hard disks have a little activity light on them to let you know when the disk is being accessed. In many cases, networks act as not much more than a huge shared hard drive. Unfortunately, you normally can't tell when the network resources are being accessed...unless you are using an Amiga. The message program has a network activity light. This flashes when there is any network I/O.

ACS also includes an Amiga specific program called ResToData. This utility will copy the resource fork of a Macintosh file to a data

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file for access from either Amiga or PC workstations.

Note that 99% of the time, the network fileserver is an MS-DOS computer. This presents an interesting problem since the Amiga supports 32-character file and directory names using spaces, and upper and lowercase letters. The ACS network is able to internally work with and retain the Amiga naming convention and use a unique and legal translation on the PC side. Consider two Amiga drawers (subdirectories) called AmigaMagicPrograms and Amiga Magic Programs Data. If you did a directory listing on a PC, these drawers would appear as AmigaMa0 and AmigaMa1.

This is certainly a limitation when accessing Amiga data on a PC, but obviously unavoidable. Even though the system automatically fixes the problem, Oxxi recommends that naming conventions be implemented that place the unique part of the name at the beginning. In other words, think about the implications on the PC side before you name a file. This will yield more meaningful PC file and directory names.

When you log off the network, you must have already exited from all applications that either came from or used the network. If one of these programs is still running, you will not be allowed to log off, rather like trying to exit from Windows while a DOS application is still running.

Networks are great for resource sharing. You could hook a multitude of Amigas, PCs, and Macs to a single laser printer. Storage efficiency can also be increased. Instead of every computer having its own hard disk, you can add large drives to the fileserver. This also speeds up backups and minimizes related headaches, since only the fileserver has to be backed up. Often, other peripherals, such as scanners, hard drives, and CD-ROM units, are less expensive for PCs as well. These could be added to the fileserver and accessed directly or indirectly by the Amiga.

The file-sharing capability, perhaps used in conjunction with something like ASDG's Art Department Professional to change file formats, opens exciting new possibilities for a multiplatform network. Houston says, for instance, that ACS is popular on networks that include Video Toasters.

In order to use ACS to connect your Amiga and PC, you must, of course, have the networking hardware and software that allow your PC to act as the fileserver.

Novell network administrators might find it helpful to add an Amiga to their networks just to do maintenance and station setups. The Amiga's preemptive multitasking operating system makes network administration a very easy task, since all the necessary programs can run simultaneously. Additionally, Amiga directory utility programs, which are light years ahead of any available for the PC, could be used for file maintenance.

I use a Novell network on a daily basis and felt right at home using the Amiga version. All of the standard utilities that execute at a DOS prompt are available using the Amiga CLI. For the screen-based programs, like Syscon, the PC keystroke implementation is dead on, but adapting to the more efficient mouse point and click is a breeze.

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continued on page 154

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MAG MX15F 15" N-I Monitor
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8 Bit Ethernet Card	$79
16 Bit Ethernet Card	$105
8 Bit Arcnet Card	$55
16 Bit Arcnet Card	$75
Arcnet Active Hub (8 Ports)	$125
NOVELL Netware V. 2.2 (5 Users)	$505
NOVELL Netware V. 2.2 (10 Users)	$1035
NOVELL Netware V. 3.11 (10 Users)	$1350
NOVELL Netware V. 3.11 (20 Users)	$1900
SCO UNIX Sys. V (Unlimited Users)	$1025
SCO Multiview Window Environment	$280

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PRODUCT SPOTLIGHT

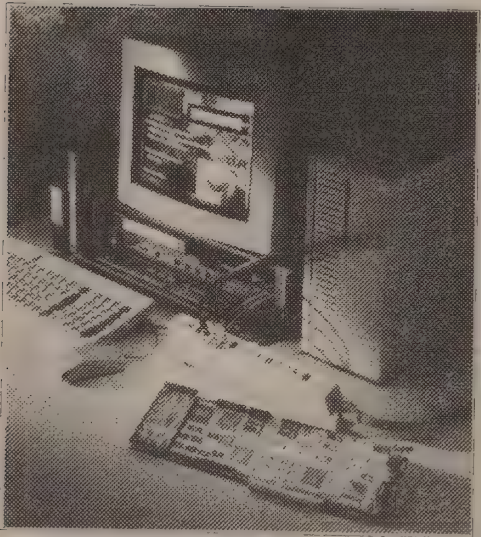
New Products

MACINTOSH HARDWARE

POWERPORT INTERNAL FAX MODEM

The PowerPort Series of internal fax/modems for the PowerBook consists of three versions: Gold, Silver, and Bronze. The top of the line PowerPort/Gold is a 14,400bps modem with 9600bps send/receive fax capabilities. The Silver version is a 9600bps data and send/receive fax modem. The affordable PowerPort/Bronze offers 2400bps data access, 9600bps fax send, and 4800bps fax receive speed. All three products include Global Village's GlobalFax software enabling users to manage every detail of fax transmission and reception conveniently, privately, and transparently. (The PowerPort/Gold lists for $795, PowerPort/Silver for $595, and PowerPort/Bronze for $295) Global Village Communications, Inc., 685 E. Middlefield Rd., Bldg. B, Mountain View, CA 94043. (415)390-8200. AppleLink: GLOBALVILLAG.

RADIUS VIDEOVISION



VideoVision is a new desktop product that enables a personal computer user to combine computer graphics, text, analog and digital video, and sound, and output them easily and directly to standard VHS videotape. This package consists of a single, digital interface card with built-in video input, video output and 24-bit graphics display capabilities, an external connector panel for video and audio connections, and comprehensive software controls. The interface card fits in a NuBus slot of any Mac II, IIx, IIcx, IIci, IIfx, or Quadra. VideoVision doubles as a 24-bit color frame buffer that can display photo-realistic images from any application, eliminating the need and cost of a separate display interface card. ($2399) Radius, Inc., 1710 Fortune Dr., San Jose, CA 95131. (408)434-1010.

Continued

PRODUCT UPDATES

➤**Alias Research** announced **Alias Sketch 1.5**, the newest version of its free-form 3-D illustration and design software for Macintosh computers. The upgrade will cost $25. Alias Research, Inc., 110 Richmond St. E., Toronto, Canada M5C 1P1. 1-800-447-2542.

➤**CE Software** released **QuicKeys 2.1.2**, which includes Instant QuicKeys, QK Icons, and seven new logic extensions. CE Software, Inc., 1801 Industrial Cr., PO Box 65580 W. Des Moines, IA 50265. (515)244-1995. AOL: CESOFTWARE.

➤**Central Point Software** is shipping **Central Point Anti-Virus 1.3**, which now detects and eliminates more than 1200 viruses. Central Point Software, Inc., 15220 N.W. Greenbrier Pkwy., #200, Beaverton, OR 97006. (503)690-8090.

➤**Dantz** is shipping **DiskFit Pro 1.1**. Dantz will ship a free upgrade to all registered owners of DiskFit Pro 1.0. In addition, Dantz is offering to upgrade SuperMac DiskFit customers to Dantz DiskFit Pro for $29.95. Dantz Development Corp., 1400 Shattuck Ave., Suite 1, Berkeley, CA 94709. (510)849-0293.

➤**NEC** announced through December 31, 1992, current owners of **NEC InterSect CDR-73 external, CDR-83 internal** and **CDR-36 portable CD-ROM readers** can upgrade their readers' performance and multimedia capabilities through the **NEC Technologies CD-ROM Reader Enhancement Program**. NEC Technologies, Inc., 1255 Michael Dr., Wood Dale, IL 90191. (708)860-9500.

➤**Peachtree Software** is shipping **Peachtree Complete III, v6.0** This upgrade encompasses three Peachtree DOS products: Peachtree Basic Accounting, Peachtree Complete Accounting, and Peachtree Complete Accounting, Multi-User version. Peachtree Software, Inc., 1505 Pavilion Pl., Norcross, GA 30093. (404)564-5800.

➤**Rupp Technology** invites all unregistered owners of **FastLynx** to call and register—no questions asked. Unregistered end users will be eligible for a special upgrade offer to the recently released v2.0. Rupp Technology Corp., 7285 Franklin Ave., Los Angeles, CA 90046. 1-800-852-RUPP.

➤**SCO** is shipping **SCO Open Desktop Release 2.0**, the latest version of its integrated advanced operating environment for industry-standard 386/486 desktop workstations and multifunctional servers. The Santa Cruz Operation, Inc., 400 Encinal St., PO Box 1900, Santa Cruz, CA 95061. (408)425-7222.

➤**WordStar** released **WordStar for Windows 1.5**. An introductory price of $119 is good until at least the end of 1992. WordStar International, Inc., 201 Alameda Del Prado, Novato, CA 94949. (415)382-8000.

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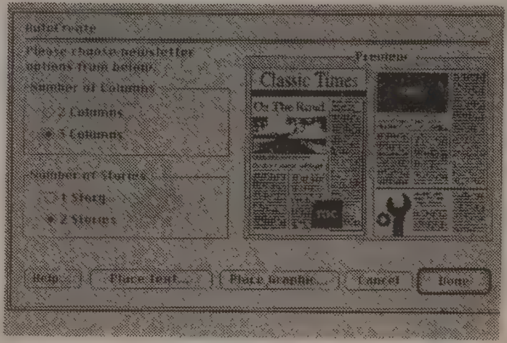
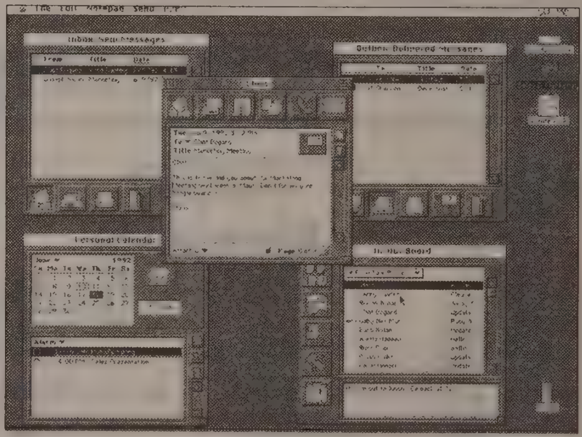


Personal Press, an entry-level page layout program, is the first page layout software to design and assemble users' text and graphics automatically. As part of its underlying automation technology, v2.0 includes over fifty "intelligent" AutoCreate templates, which will make publications practically create themselves. These templates will present users with a series of options regarding how they'd like the document to look, and will guide them through creating it with their own text and graphics. The program will then design, build, and clean up the document down to the last detail, so it will be ready to print in a matter of minutes. ($199) Silicon Software, Inc., a subsidiary of Aldus Corp., 9770 Carroll Center Rd., Suite J, San Diego, CA 92126. (619)695-6956.

ASANTÉ PERSONTOPERSON



PersonToPerson is a comprehensive network communications application that enables Macintosh users to exchange voice messages and text files without a server. Aimed at departmental workgroups, PersonToPerson eliminates the cost and complexity of a dedicated server, allowing users to install the program as a desk accessory. In addition to facilitating interoffice communication, PersonToPerson provides monthly and daily calendars with timed reminders, an In/Out board for tracking the whereabouts of coworkers, a built-in personalized screen saver, and file transfer capabilities. It is 100% compatible with AppleTalk, TokenTalk, and EtherTalk. (The list price for a two-user Twin Pack is $149, a ten-user Pack is $399, and a Zone User Pack is $699) Asanté Technologies, Inc., 404 Tasman Dr., Sunnyvale, CA 94089. (408)752-8388.

RETRIEVE IT!

Retrieve It!, a new text-finding utility for the Macintosh, is designed to make it easy to swiftly hunt inside files and find any text—including partial names, phrases, or numbers. A Peek window allows the user to find, view,

Continued on page 86

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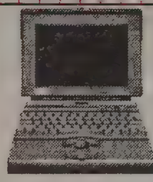

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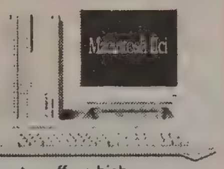

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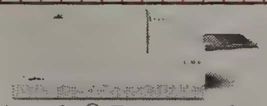

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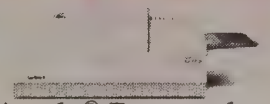

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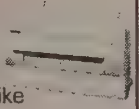

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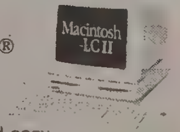

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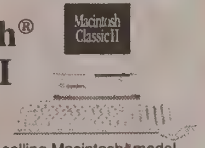

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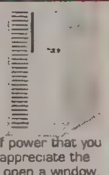

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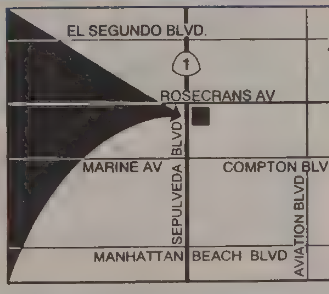

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1024 X 768 VGA COLOR SYSTEM

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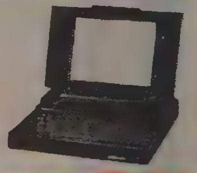

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to 5MB
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12 Resident Fonts
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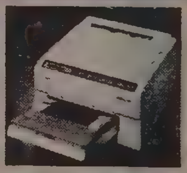

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512K RAM Expandable to 4.5MB
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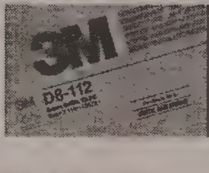

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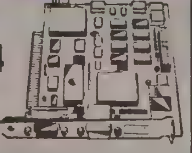

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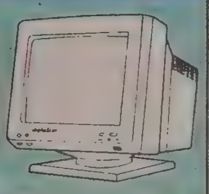

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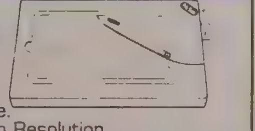

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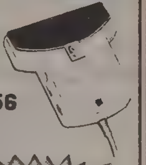

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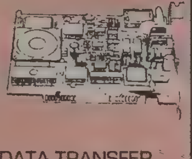

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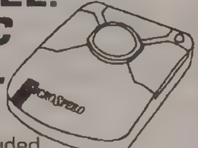

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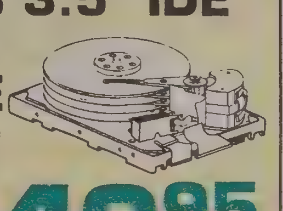

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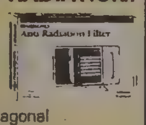

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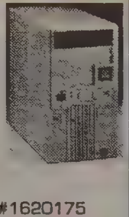

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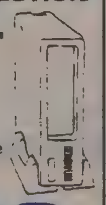

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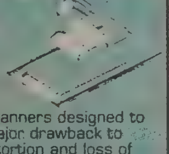

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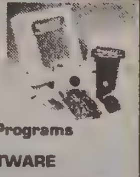

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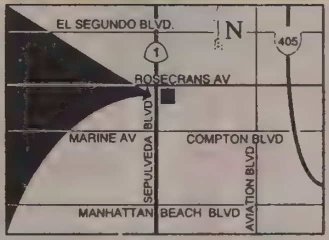

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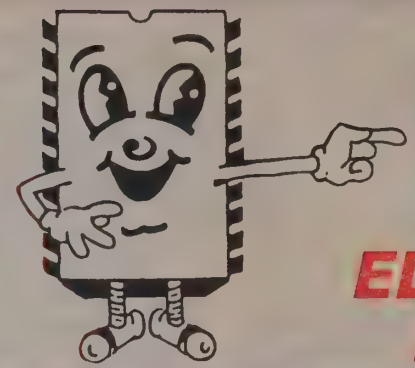

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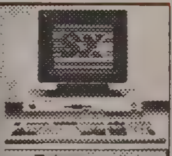

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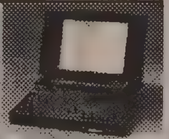

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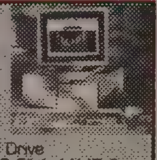

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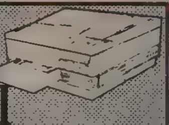

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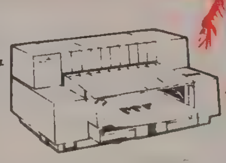

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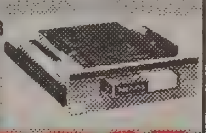

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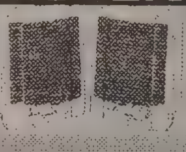

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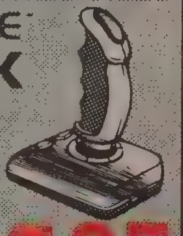

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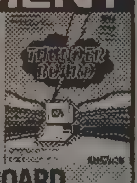

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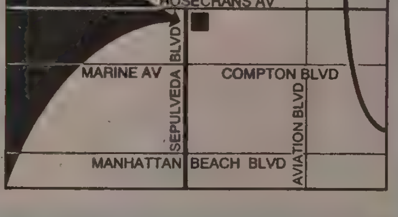

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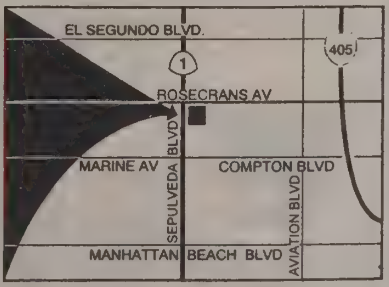

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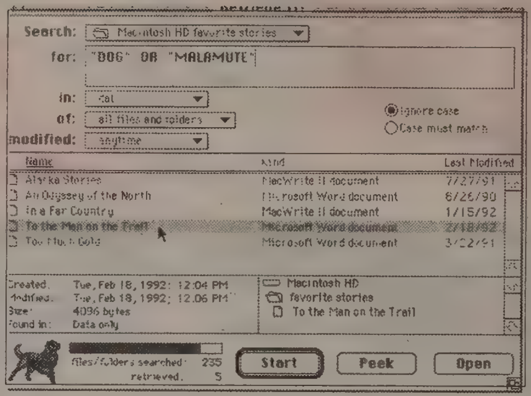

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Continued from page 80

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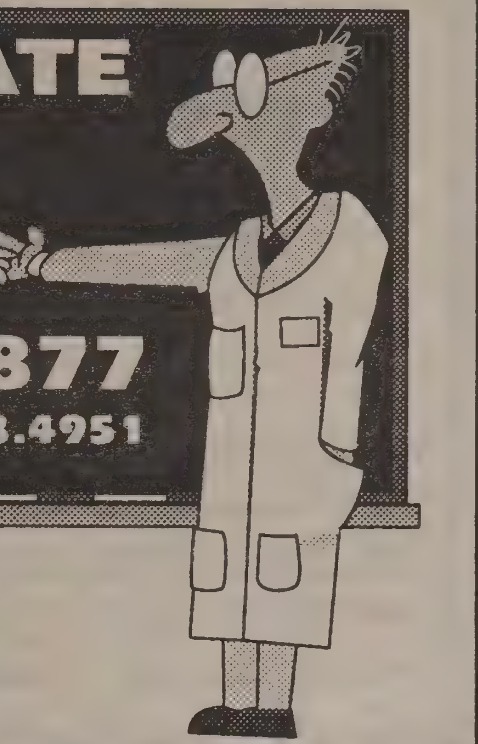

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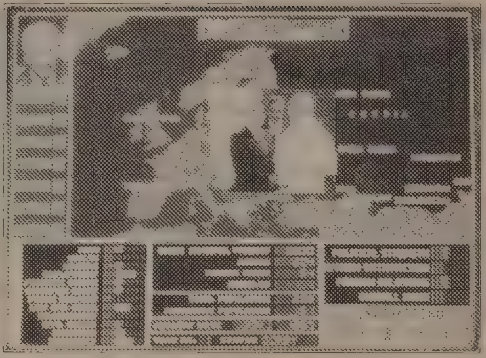

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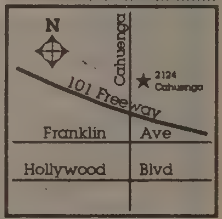

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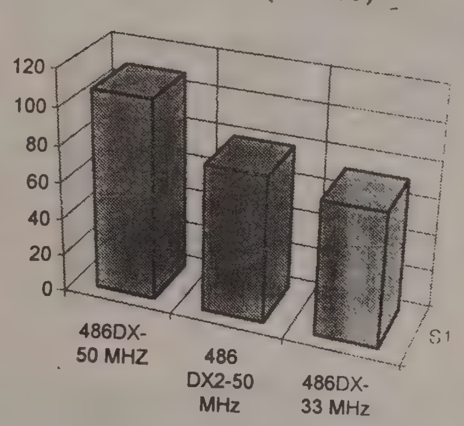

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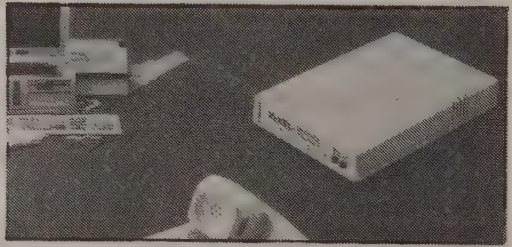

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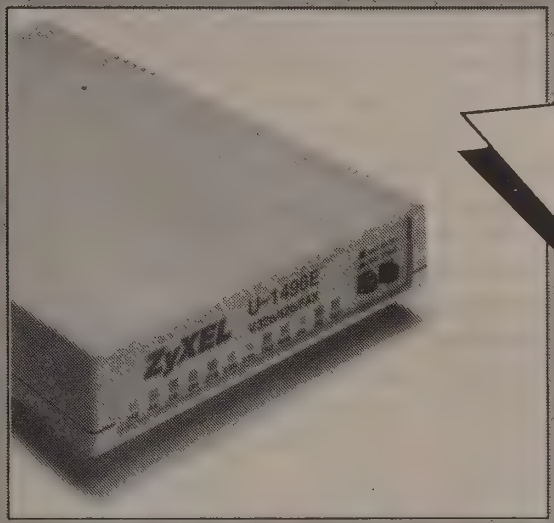

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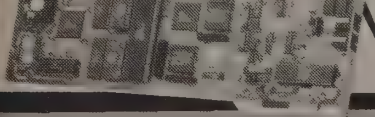

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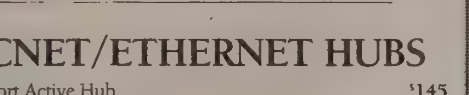

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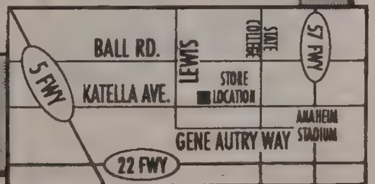

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Graphics and Animation: 9
Sound: 8
User Interface: 8
Overall Play Value: 7

You set policy by clicking the desired option, for example, Style of Government ranges from "despotic" to "ultra-liberal." After your initial policy decisions have been input, the display opens to a rather busy Main Screen, which includes a menu bar; a scrolling map; a set of "Action" buttons; and panels of social, political, and economic indicators. Social indicators, for example, include Food, Health, Housing, Employment, Personal Income, Consumer Goods, Public Services, Law and Order, Environment, and Civil Rights. The indicators are displayed as bar graphs, which can be green, yellow, or red, depending on how bad things have gotten. Economic indicators are displayed as numbers: Gross National Product, Assets, Foreign Credit, Reserves, Total Population, and Productive Population.

As the game proceeds you will be bombarded with dispatches, and crises will break out. You can go to the crisis phone bank, a desktop with four phones and a cup of tea. Pick up a phone and one of your top advisors will offer advice and alternatives. You can reject the advice by clicking on the teacup.

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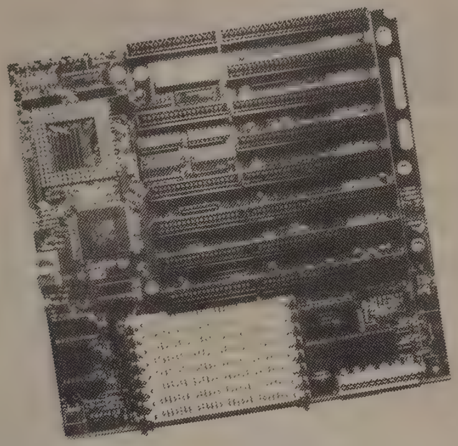
486DX/SX NONCACHE(AR425)

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Comparison Table

Software	Version	386-40	***486SX-25***	Unit
Power Meter	I1.7	8.6	***11.1***	MIPS
Landmark	V1.14	64.9	***113.2***	MHz
Checkit	V3.0	9747	***12054***	Dhystones
Qaplus	V4.52	11379	***15172***	Dhrystones
Cache Size		64K	***0K***	Byte
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*Estimated in July, based on minimum quantity of 100 units.

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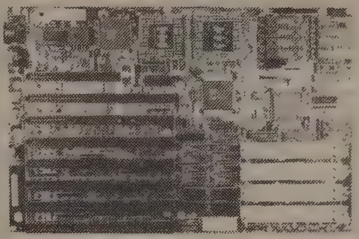
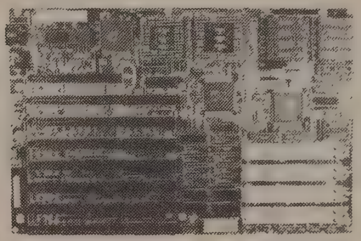
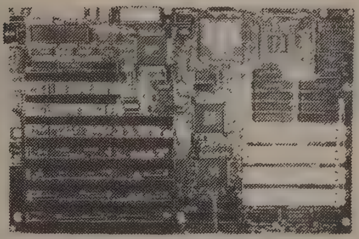

486DX-50(AT450)

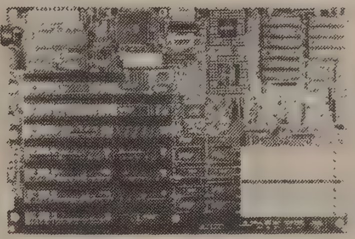
CPU:80486-50
CHIPSET:SIS
CACHE:64/128/256/
512KB/1MB
BIOS:AMI
BOARD SIZE:BABY
SLOTS: 8


486DX-33;SX-25/ 20(AT433)

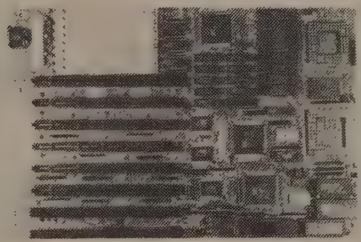
CPU:80486DX2-50/66
CHIPSET:SIS
CACHE:64/128/256/
512KB/1MB
BIOS:AMI
BOARD SIZE:BABY
SLOTS: 8


386DX-40/33/25(FU333)

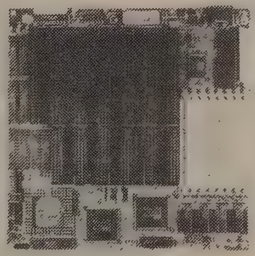
CPU:80386-40/33/25
38605-40/33/25
CHIPSET:CHIPS AND TECH.
CACHE:64/128/256/
BIOS:AMI
BOARD SIZE:BABY
SLOTS: 8


386DX-33/25(FS333)

CPU:80386-40/33/25
CHIPSET:SIS
CACHE:64/128/256/
BIOS:AMI/AWARD
BOARD SIZE:BABY
SLOTS: 8


486-50/33 EISA(AE4)

CPU:80486-50/33
CHIPSET:SIS
CACHE:64/128/256
BIOS:AWARD
BOARD SIZE:BABY
SLOTS: 8


486DX-50/33;486SX-25/20(AX4)

CPU:80486DX2-50/66
CHIPSET:SIS
CACHE:64/128/256/
BIOS:AMI/AWARD
BOARD SIZE:HALF
SLOTS: 7

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Spectrum HoloByte has billed Crisis in the Kremlin as "the game that predicted the coup," a boast that might have seemed a little grander if the game had shipped six months sooner.

The 144-page user manual includes notes on strategy and extensive background material on Russian and Soviet history. The package also includes a paperback book, *Klass: How Russians Really Live* by David K. Willis. Dan Guerra's artwork effectively conveys the 1940s retro look we tend to associate with Soviet industrial design. Animated newsreels and sound files boost the file size of the game to an impressive 11MB.

Crisis in the Kremlin would be a great classroom exercise for a course in political science or modern history. (Spectrum HoloByte, Inc., 2061 Challenger Dr., Alameda, CA 94501. 510/522-3584)

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Continued on page 101

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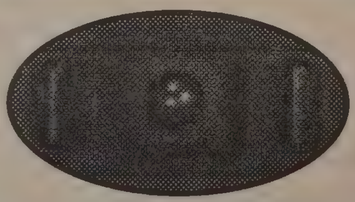

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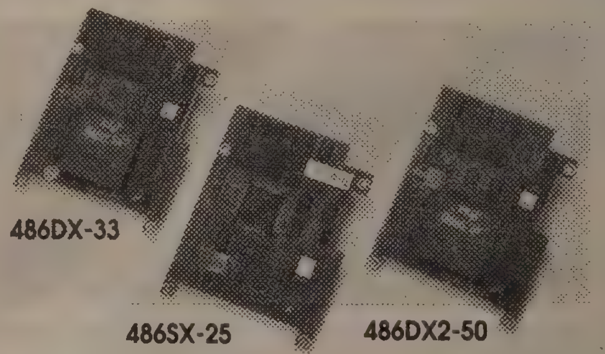

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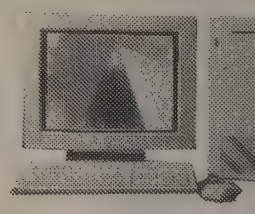

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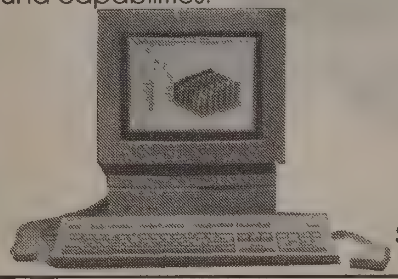

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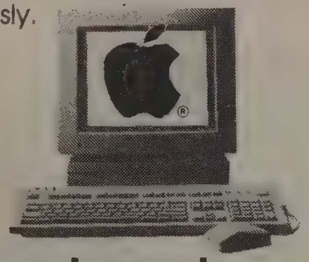

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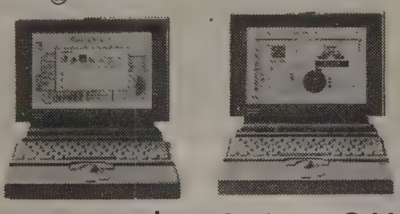

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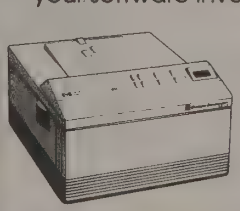

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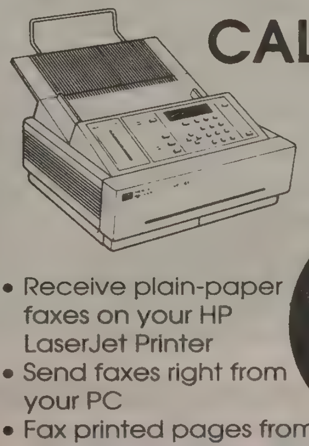

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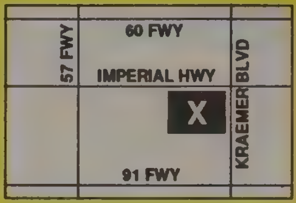

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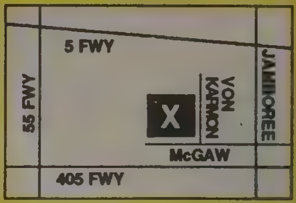

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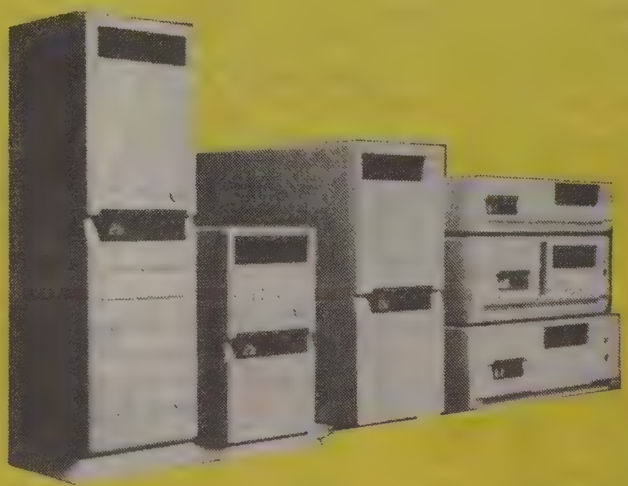

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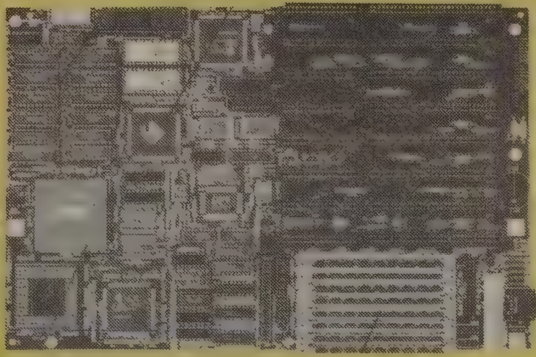

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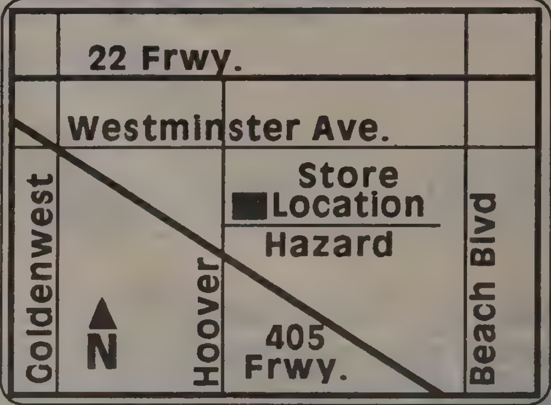

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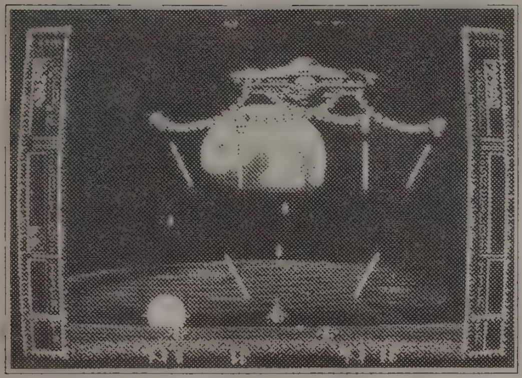
Continued from page 94

For: MS-DOS (640K, VGA, joystick recommended, popular audio cards supported) Amiga version also available.
List Price: $39.95

Space Invaders, designed by Toshihiro Nishikado, was one of the great coin-operated arcade games of the 1970s. If you missed the 1970s, the game involves shuffling formations of animated sprites that drop inexorably toward the bottom of the screen while you blast gaps in their ranks with a zapper that slides left and right. This simple formula was insidiously addictive—children stole coins from their parents to play the game; executives took endless lunch breaks to play Invaders all afternoon. It became a worldwide social problem.



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The program is installed from four 360K disks. A 24-page booklet provides useful tips on strategy and diagrams of the patterns that the Invaders follow on each level. On the negative side, there seems to be no way to turn off the sound, or to bypass the rather long introductory animation sequence. (Accolade, Inc., 5300 Stevens Creek Blvd., San Jose, CA 95129. 408/985-1700)

Graphics and Animation: 9
Sound: 6
User Interface: 6
Overall Play Value: 7

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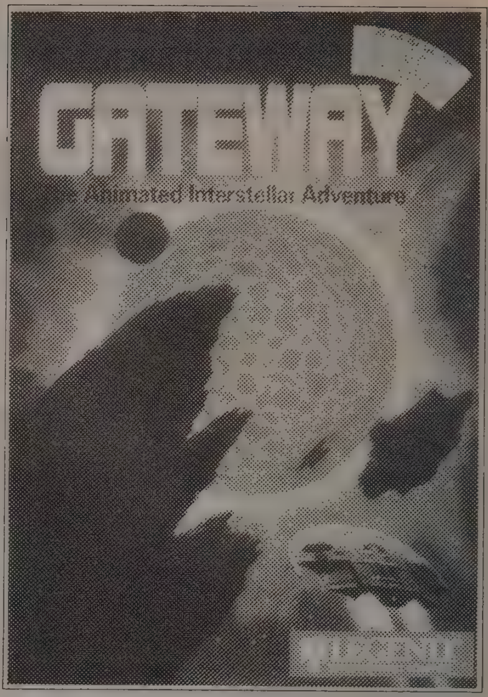
GATEWAY

Designed By: Duane Beck and Bob Bates
Published By: Legend Entertainment
Distributed By: Accolade
For: MS-DOS (640K, VGA/EGA/CGA, supports mouse and popular sound cards)
List Price: $59.95

Frederick Pohl's series of four Gateway novels are a high point in the generally depressing landscape of contemporary science fiction. The year is 2102 and Earth is dying from overpopulation and pollution. Back in 2077, on the outskirts of the solar system, the Gateway, an ancient, abandoned, alien space station had been discovered. Gateway is the base for a fleet of small faster-than-light spacecraft, still in working condition. The secrets of their navigation and propulsion systems baffle Earth's best scientists, but there is no shortage of volunteers willing to strap themselves into a cramped cabin and warp out to find Death or Glory where no person has gone before...

Graphics and Animation: 9 (awesome)
Sound: 8
User Interface: 8
Overall Play Value: 8

The design and programming team of Legend Entertainment tackled a big challenge in adapting this cult classic to the format and conventions of an interactive adventure game. The look and feel of the game will be instantly familiar to fans who have read Pohl's books, but it does not follow the exact plot lines and episodes in the novels. You take the role of a volunteer, newly arrived at Gateway and waiting for your first assignment from the Corporation that controls the station. The screen display includes a graphic window (256-color VGA, with some nifty cinematic animation); a text window, where the story unfolds; and a series of command buttons and scrolling lists that you use to compose your inputs. You definitely want a mouse for this game; there is no joystick support. You can examine objects in the graphic window by clicking on them, or pick them up by double-clicking.



For 7MB of hard disk space you get an entire galaxy, with many exotic planets to explore, difficult puzzles to solve, and countless ways to die horribly. As you probably guessed, the object of the game is a quest to save the Galaxy, but first you have to figure out what you're supposed to do. This may take many hours or days, especially if you resist the temptation to peek into the clue book, which is graciously included in the package. (Legend Entertainment, Inc., 14200 Park Meadow Dr., Chantilly, VA 22021. 703/222-8500)

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Reviewed By: Matthew Leeds

Continued on page 108

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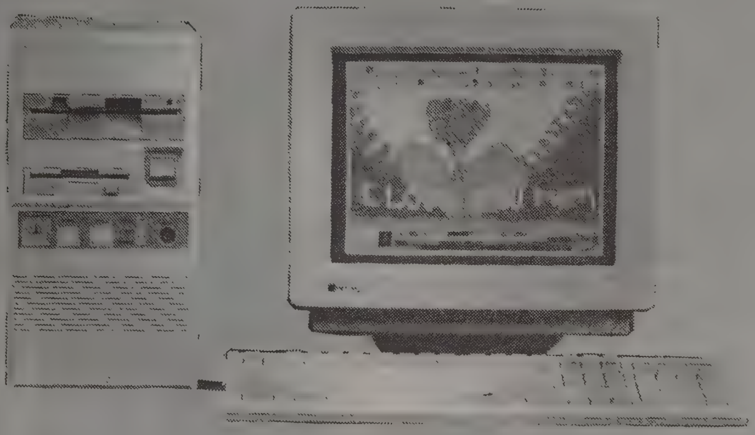

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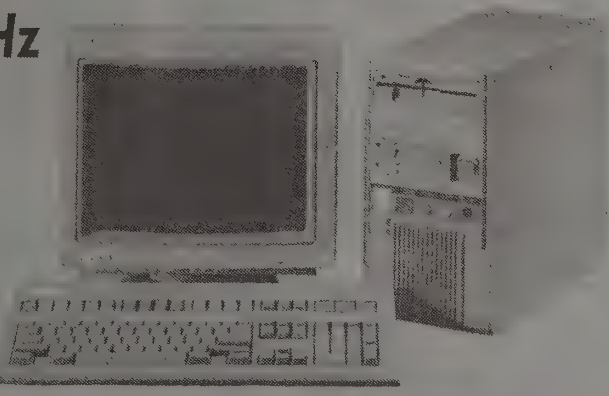

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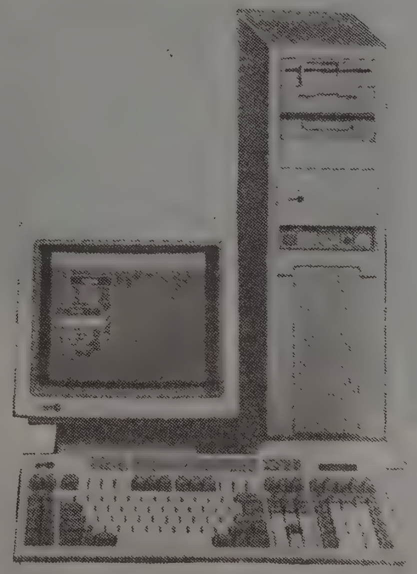

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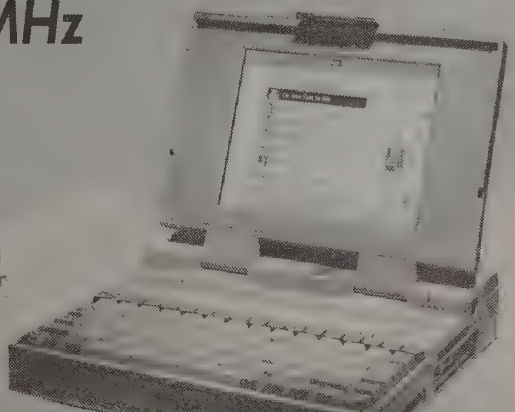

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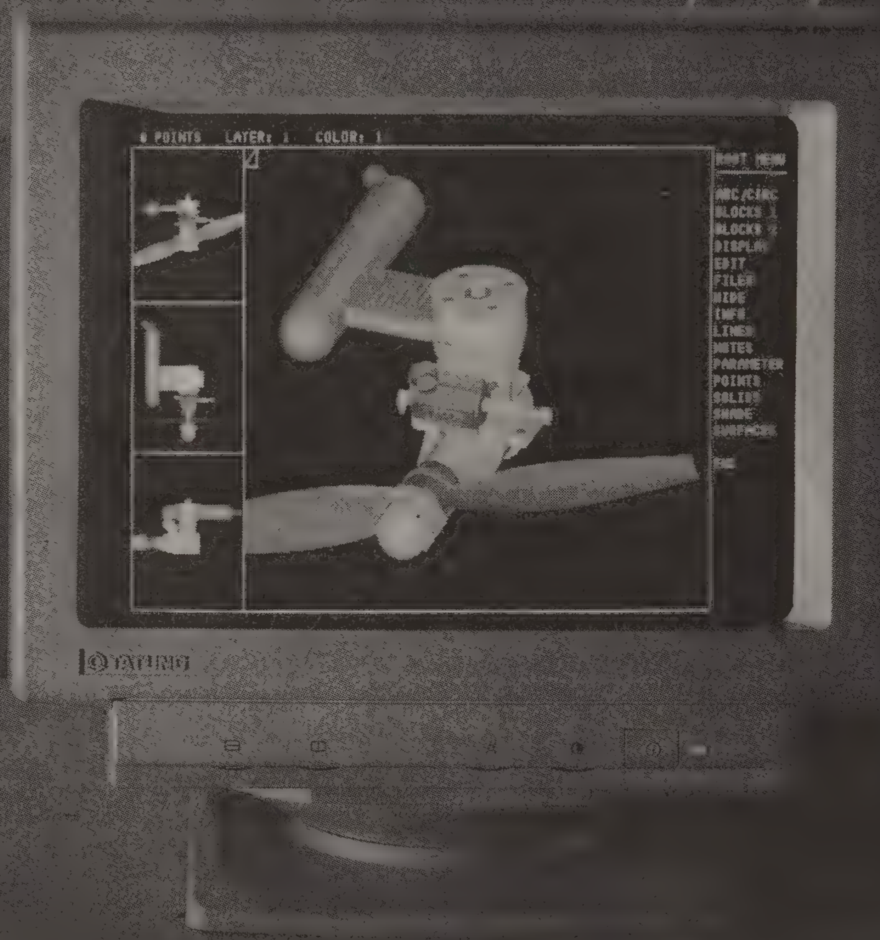

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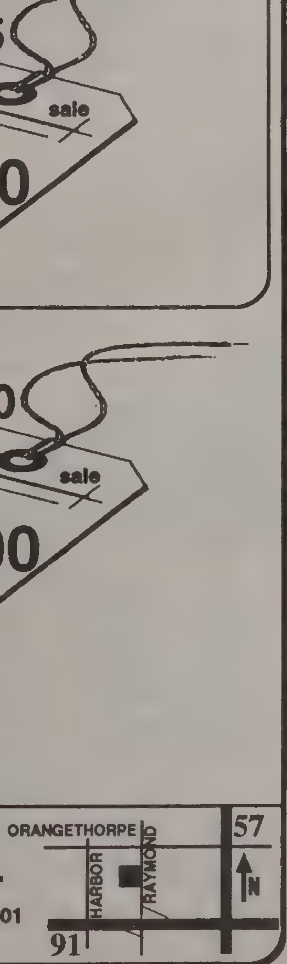

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intel inside

Recommended by Computer Buying World Magazine, June '92

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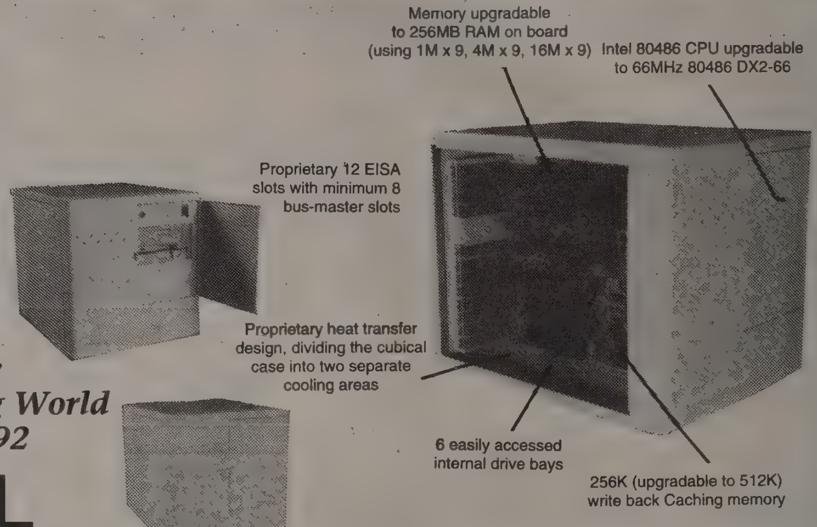
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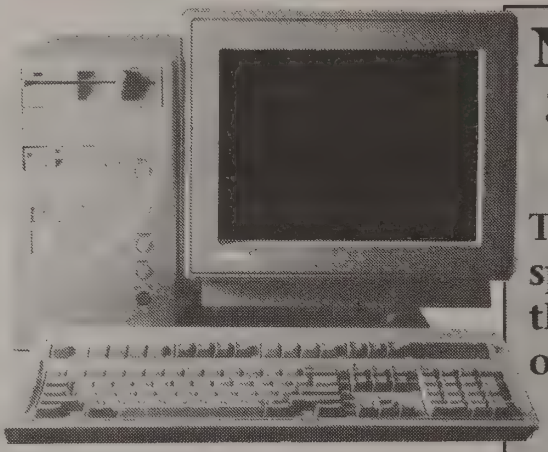

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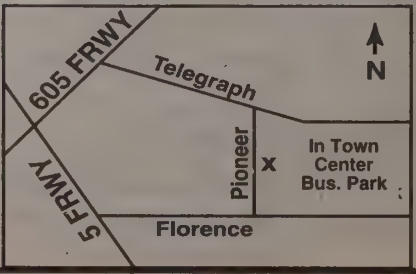
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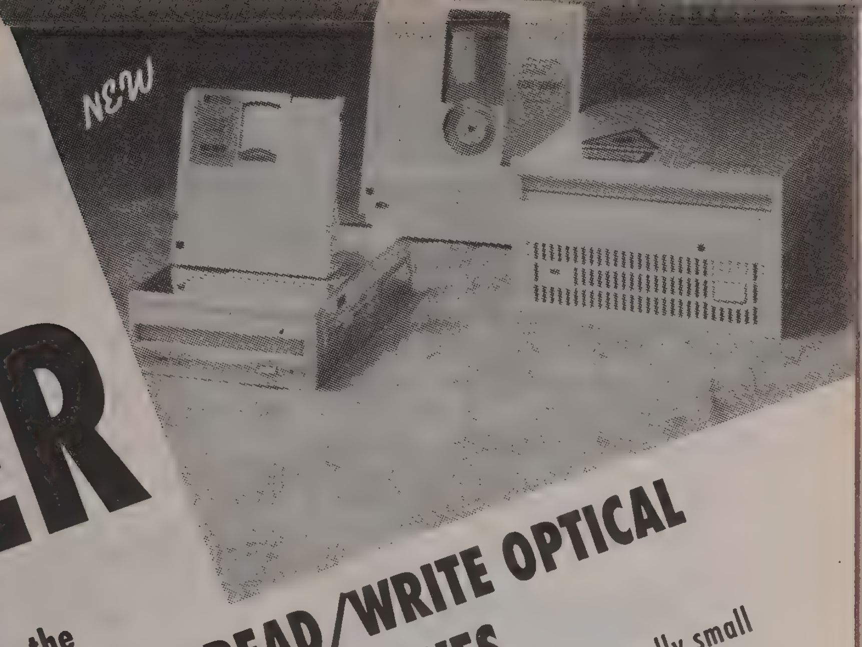

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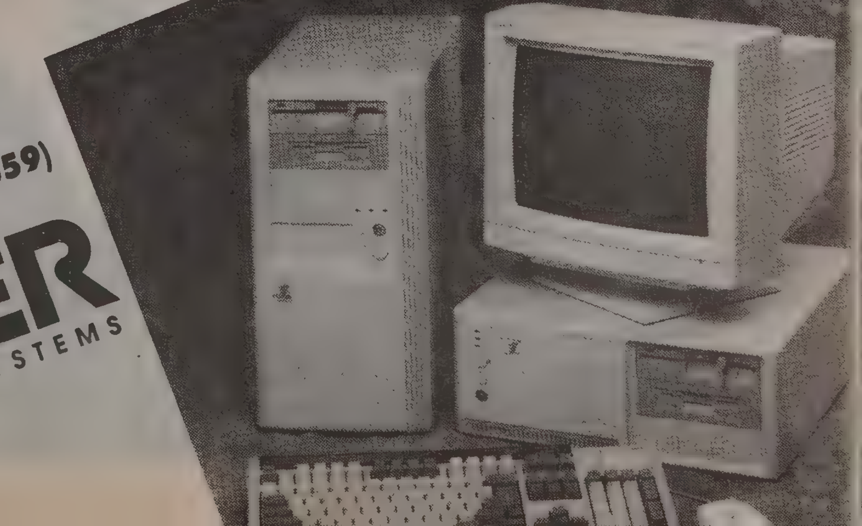

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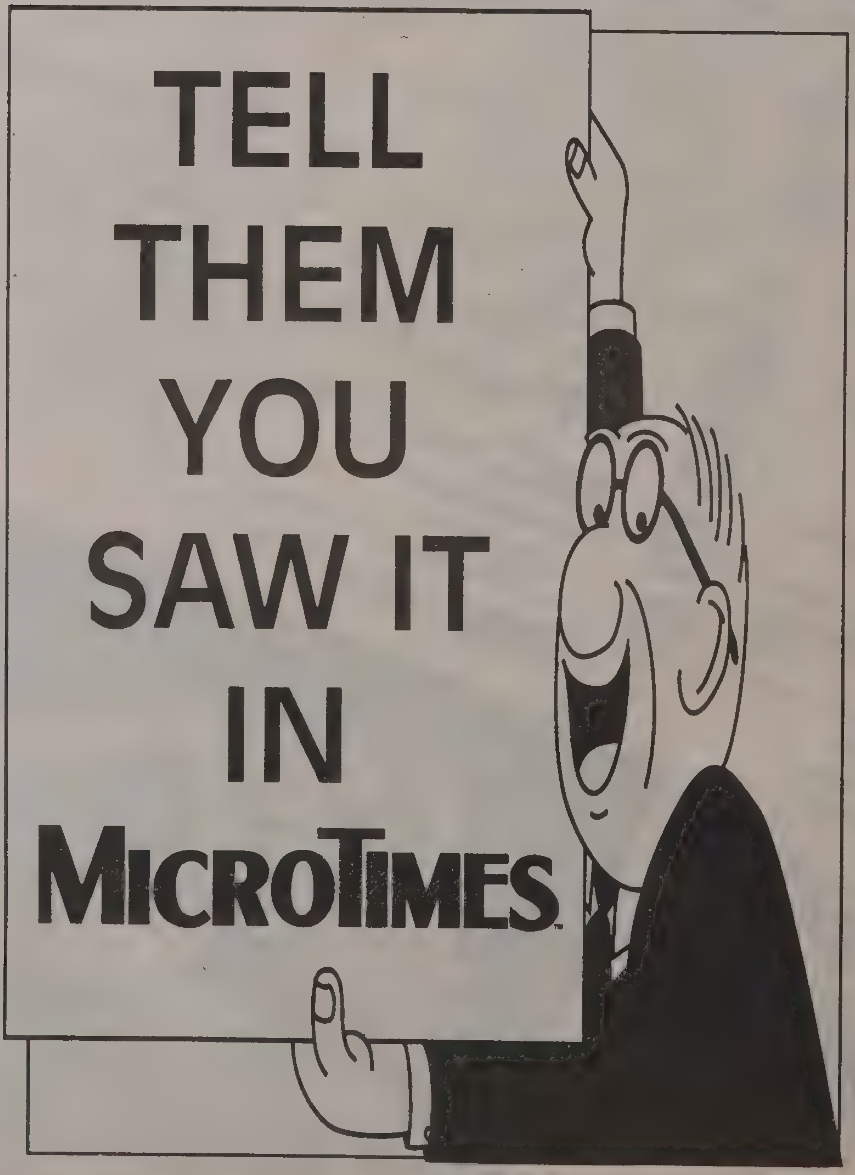

TELL THEM YOU SAW IT IN MICROTIMES

Continued from page 102

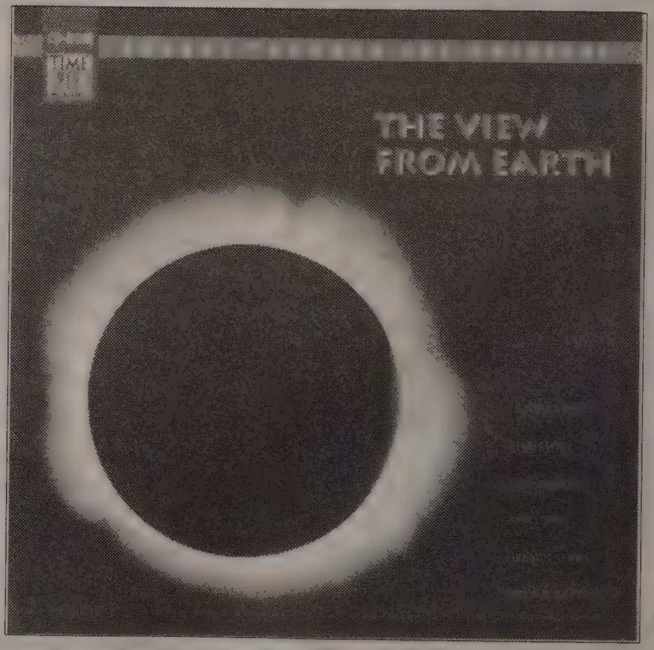
Imagetects is a supplier of quality photo-realistic libraries of texture maps and backgrounds. All of their texture maps are designed to be tiled and can be used with any presentation, animation, modeling, paint, desktop publishing, multimedia, or rendering software. This library contains 1150 texture maps and images in a combination of materials including brick, marble, metals, roofing, stone, tile, water, wood, and sand. There are also doors, light and other fixtures, furniture, sky scenes, people, and vehicles. All of these are provided in 8-bit, 16-bit, and 24-bit versions in several file formats for DOS, Windows, Macintosh, and Amiga computers.

To solve the indexing problem across so many diverse platforms, Imagetects provides a laminated ring-bound index with both a directory tree to each file and a photo-illustration of each file. This makes browsing easy as your computer does not need to be on, nor does it need to be present while deciding on which images may be used.

If the price tag attached to this voluminous collection is too high, subsets of the complete library are available at lower prices. The images are mostly of excellent quality with a great variety of textures and colors. I've been able to make considerable use of the images in several applications over the past few weeks. (Imagetects, Inc., 7200 Bollinger Rd., Suite 802, San Jose, CA 95129. 408/252-5487)

THE VIEW FROM EARTH

Published By: Warner New Media
List Price: $79.98
Reviewed By: Matthew Leeds



Warner New Media continues to cover new ground in repackaging and presenting older information in a new way. This CD-ROM contains interactive material covering the July 11, 1991, solar eclipse and the contents of three Time Life books from the "Voyage Through the Universe" series. Hundreds of color images, two hours of audio narration, more than a thousand text screens, diagrams, and maps have been put together in something that is more than a book and different from a video documentary.

The bulk of the CD contains narrated slide shows that explain the science behind our solar system. A glossary and index allow access to additional information in text form. An Eclipse Tracker displays a map of the world to show the paths of past, present, and future solar eclipses

Continued on page 112

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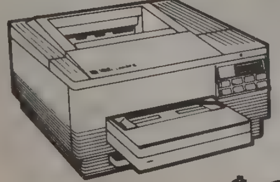

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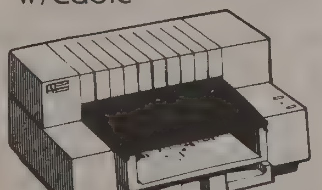

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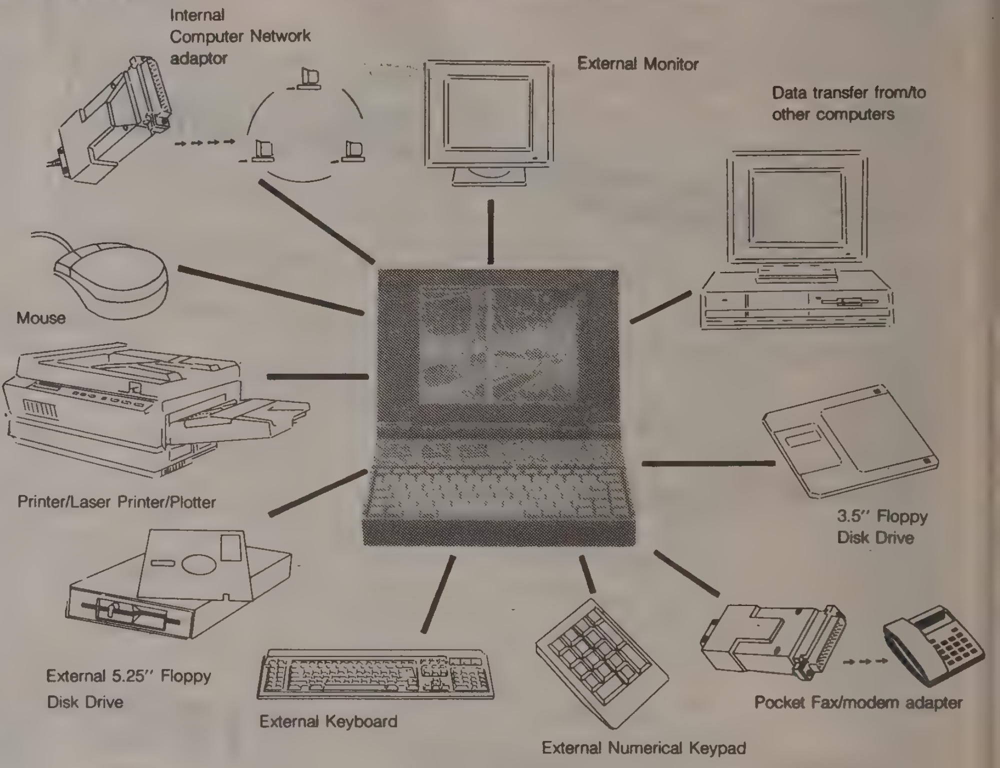
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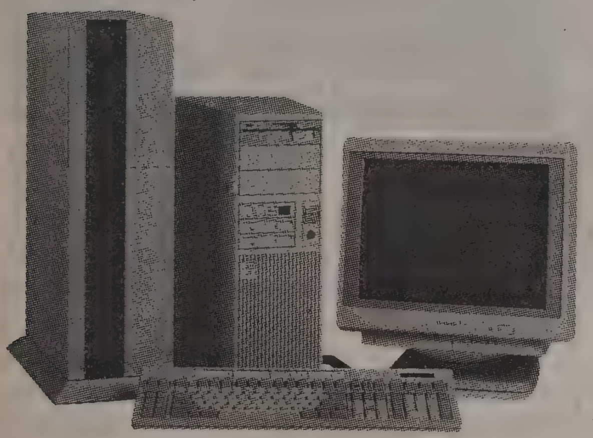

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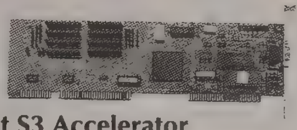

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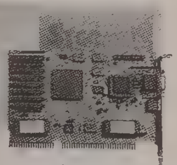

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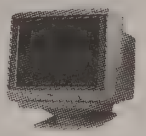

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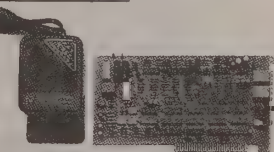

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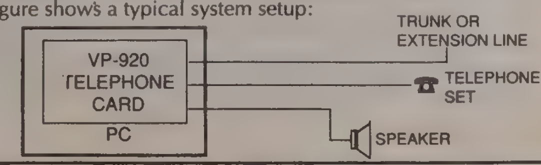
The VP-920 PC Phone System is an IBM PC based telephone message processing system designed for personal and business use. When connected to a phone line either directly or through a private phone system, it provides the following five functions: Voice Mail, Telemarketing, Phone Book Dialing, Auto-recording and Voice Memo. These functions are tightly integrated in a user-friendly environment where the power of computer and communications become one. The following figure shows a typical system setup:



Continued from page 108

from 1940 to 2040. Another section features the Anatomy of an Eclipse, explaining what causes eclipses and why they don't happen more often.

The View From Earth is fun to view, informative, and in most sections fairly technical (just as the Time Life science series is). It requires a color Mac with 4MB of memory to run this CD, and at times waiting for data to arrive from the CD drive gets tedious, but that's mostly a fault of CD-ROM technology in general, and not this product in particular. If you or your children enjoy science education, this is a product worth your consideration. (Warner New Media, Inc., 3500 Olive Ave., Burbank, CA 91505. 818/955-9999)

COMPOSER QUEST

Published By: Dr. T's Music Software
List Price: $99
Reviewed By: Woody Liswood

Composer Quest is an application whose time has arrived! Multimedia Windows creates a growing desire (and need) for music to use with your PC. On a single CD-ROM, Composer Quest gives you a selection of music samples from composers since 1600. This is predominantly classical music with some classic jazz.

There are several ways to find the composer or music you want. The easiest is to make a selection from a time-line screen showing the major musical periods—a type of GANTT chart for music. When you select a specific historical period, Composer Quest gives you the selection of the composers it has for that period.

As part of a game, Composer Quest will play a mystery melody and let you search for the composer. However, unless you are an expert's expert, finding the correct composer may humble you. Be prepared.

On my Multimedia Windows PC, the music sounds great, but there is not enough of it. When you find something you like, you should run to your favorite music store, get the CD of the entire piece, and return to your computer to listen.

In addition to the musical selections, Composer Quest contains 256 full-color screens showing artwork from each time period and portraits of the composers.

I was humbled by the trivia questions, the built-in quizzes, and even the mystery music. Making the assumption that I knew something about classical and jazz music, I thought this would be fun. I found that what I thought I knew was such a small piece of the musical pie, that I spend many happy, if non-income-producing hours, exploring the sounds of Composer Quest.

This is one of those CD-ROMs that I would have in my collection, if for no other reason than to show folks a *real* multimedia application under Windows. (Dr. T's Music Software, 100 Crescent Rd., Needham, MA 02194. 617/455-1454)

continued from page 58

and it will end up being a market that splits into a relatively small group, probably three major national services. I think that group is already pretty well defined—CompuServe, Prodigy, and America Online. And we'll see the emergence of a variety of highly specialized services, some just dealing in the personal finance area, such as one service called Smart Investor that recently came out. Some just focusing on games, which is what the Sierra network is doing. Some focusing on marketing business information, like AMIX.

So it really will be a market that's characterized by a few major players that have lots of customers, and are platforms that major media companies, for example, can feel comfortable working in tandem with to provide services like we're doing with the *Chicago Tribune*, as well as a proliferation of highly specialized, kind of small-sized providers, meaning very narrow interests.

What about Internet? You now have the easiest-to-use Internet mail in the world.

Well, it's a start. Internet's kind of interesting in that it developed without a grand strategy. It really developed kind of organically to become this network-of-networks that's clearly the largest interconnected network in the world. Millions of people are using it daily.

We just felt the opportunity was to marry the affordability and accessibility of America Online with the power and reach of Internet, and the first step was the email gateway we announced a couple weeks ago. It's already quite popular. We're transmitting thousands of messages each day now between America Online and Internet.

But we think beyond that there's an opportunity—Internet's got a lot of power, but it's also hidden away from most people. You've got to know the secret keys to get into an Internet system, and then you have to figure out how to get around the Internet system. So in many respects it's this resource that is hidden from normal people. We want to figure out a way to bring that to real people all around the country.

A lot of people are talking now about the commercialization of Internet, trying to figure out ways to take the Internet from being reliant on government subsidies to being supported by business traffic. We want to go a step further and figure out how to consumerize Internet, try to make it accessible to the masses. Email, as I said, is the first step; we're trying to figure out other things we can do to link America Online and Internet so you kind of get the best of both worlds.

That may include providing access through America Online's interface to some of the Internet newsgroup kinds of services. It may involve allowing people through Internet to access America Online. There's a lot of different ways that we're looking at, but it just seems like a powerful way for us to take advantage of what we do well, which is accessibility and affordability, and what Internet does well, which is have millions of people sharing ideas. There's a lot of potential for services like ours to tap into the power of Internet.

Our design philosophy has always been "ease of everything is everything". It kind of goes back to my original experience ten years ago, which I still remember vividly to this day, of sitting in a room in Kansas trying to figure out how to connect to this electronic world and how painful it was. Everything we do, and everybody within the company is constantly figuring out, is how to make this accessible to the masses.

> **"We've always believed that different services meet different needs, and that it's unlikely, as this market develops, that people are going to just subscribe to one**

And as a result, we'll take the time to do it right. We could have offered an Internet email gateway a lot sooner, but we wanted to design it in a way that worked seamlessly, like any other America Online mail system. So if you're sending mail to another America Online customer, it works the same way as if you're sending mail to somebody on CompuServe or somebody using an Internet system in Sweden. It works exactly the same way.

That takes longer, but it's important. We're going to continue to push for that ease of everything. That may mean some functionality that we'd like to provide to our customers won't be available as quickly, but when it does become available, it'll be easy to use.

Do you envision a time when AOL might have more global access than it currently does, like getting into TWICS and NiftyServe and all those systems?

Oh, sure. We do have the capability to provide international access to America Online through the existing telecommunications partners we've got, such as Sprint, that have nodes around the world.

We're also considering establishing some partnerships with companies in other countries, so we actually create localized versions of America Online that are customized for those particular markets.

Right now, we think there is an opportunity on the international side, but our focus is really still on the US side. We think there is tremendous opportunity to grow our company and our customer base just by focusing on the markets we're currently serving and serving them more effectively.

As a public company, we talk about how many members we have. At the end of March, we said we had 170,000 members. There were one hundred million households in the United States, and depending on whose numbers you believe, about ten million of them now have PCs and modems and are able to access these services. And all the new PCs have modems built in.

So there's just a huge opportunity to grow within the market we've already defined, as opposed to having to chase some new markets. So that's not something we're likely to do any time soon.■

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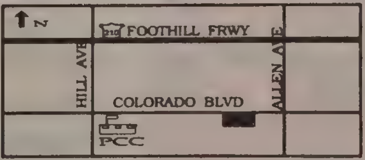

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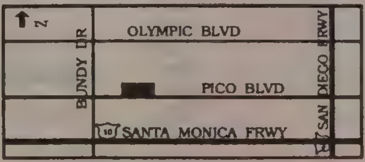

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CREATIVE TOOLS

3D Studio Version 2

Autodesk's Powerful Tool For Desktop Animation

BY ERNEST R. TELLO

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(415)332-2344

Autodesk's 3D Studio is a professional animation and modeling tool for desktop computers, allowing photorealistic rendering of three-dimensional animated scenes with real-time playback.

Its latest release is lavish with new features that make it indispensable for those who want to push the multimedia capabilities of their desktop machine to the limit. And to help users get off to a flying start with the new reworked edition of this spectacular animation tool, Autodesk includes a CD-ROM packed with hundreds of megabytes of graphics and animation goodies, ranging from ready-to-use 3-D models to texture maps for environmental and background details (e.g. clouds, and wood or marble finishes), as well as a host of impressive animations to demonstrate what 3D Studio can do.

Version 2 adds some new capabilities to the original release:

- There are "Boolean" operations—Union, Subtraction, and Intersection—that allow you to automatically add and subtract 3-D geometries to create more complex meshes.
- You can have a list of several bitmaps to use as different backgrounds in the same animation
- You can view high-res animations compatible with autodesk's Animator Pro right from within the 3D Editor or Keyframer.
- Loading .DXF files from AutoCAD for creating architectural walkthroughs is greatly improved.
- There are four types of add-in external process programs now supported, some examples of which are included, for doing automatically what cannot feasibly done interactively, such as producing particle storms, starfields etc.

AN OVERVIEW

There are three main components to 3D Studio: the editors, the Renderer, and the Keyframer.

The Renderer takes models of 3-D geometry, lighting, and textures, and renders them as projected images on 2-D viewing surfaces, such as your monitor or a printout from your printer.

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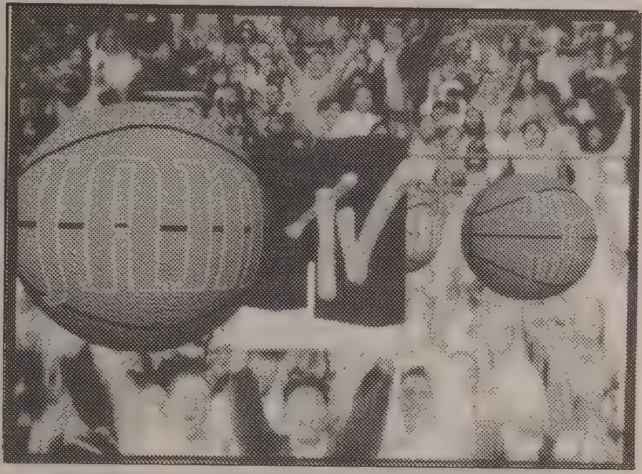
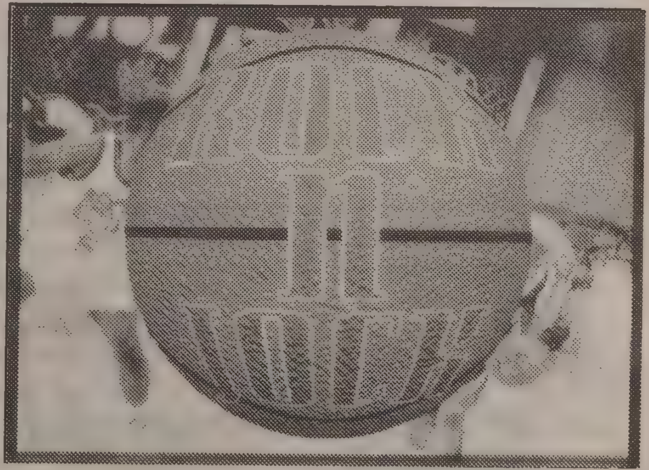




The Keyframer is the tool you use for creating animations, once you have a model. It automates a good part of the process, so that you do not have to handcraft every frame. The best way to see how this works is to quickly go through the various steps of creating animations with 3D Studio.

Of course, first you have to acquire or develop one or more 3-D models, or "meshes," as they are called in this program. These are the complex wireframes that define any object's three-dimensional geometry. If you lack the desire or time to create your own, they can be imported as .DXF files from AutoCAD and other CAD packages, or purchased from third-party developers.

Next, you might have to partition one or more large objects into several sub-objects, the parts that have the ability to move independently as required for your animation. For example, if your model is a bicycle, then you would probably want to subdivide or separate the two wheels so that the bike frame doesn't rotate with them.

Next, you would want to create linkages between the subobjects so that the assemblies move as a whole. So, using linkages, you can make a bicycle's wheels and chain move as they should when you rotate the pedal assembly.

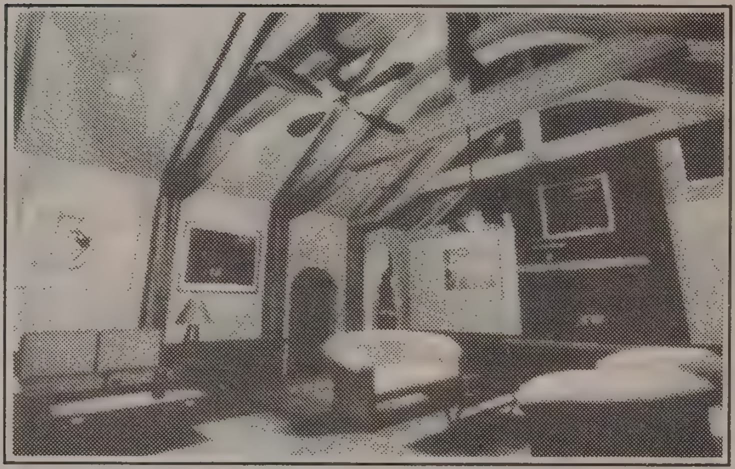
Then you would probably want to assign materials to the bicycle's components to give them color and the optical features that determine how they look when lights shine on them from different directions. You can create several of these light sources for animations, combining both omnidirectional lights and spotlights.

Then, place the cameras in their desired starting positions. Cameras define the viewpoint for what the animation screen will show in each frame.

In a sense, it is in these preparatory stages, producing the movement by generating the various frames of the animation, that your real skill and ingenuity as an animator are demonstrated.

After all the frames of your animation have been completed, either one or two steps remain, depending on what your target medium is: first, rendering the model to an animation file, and then, if needed, recording the animation to a distribution medium like video tape.

The enormous difference between making frame movements by moving whole assemblies of objects at once, rather than each one individually, cannot be overemphasized.



3D EDITOR

Usually you'll begin preparing an animation in the 3D Editor, which is quite a bit more than a mere editor of 3-D objects.

It can automatically generate many different three-dimensional shapes, such as spheres, toroids, cubes, cylinders, cones, etc. But the 3D Editor includes all the facilities you need to "make a scene," letting you create not only a cast of 3-D animation characters, but all their props and settings. It also has the tools for easily positioning all these objects where you need them.

A particularly important group of commands in the 3D Editor are the detach commands. They let you perform such functions as creating unusually shaped objects by subtracting sections from more symmetrical existing ones, and articulating large complex objects into named subcomponents.

For providing visual richness with the minimum of pain, an important feature of the 3D Editor is its ability to apply texture maps to the surface of 3-D objects. Four types of geometry for texture mappings are provided: planar, cylindrical, spherical, and lofted, all of which can be used with objects of any shape. Their difference lies in the coordinates used by the mapping.

A good way to see the difference is to compare planar, cylindrical, and spherical mapping onto a cube object. A planar map can only project an image onto one of the sides of the cube. A cylindrical map, however, knows how to map around corners of the cube, but only around one axis. With a spherical map the image can turn corners around two axes, which means that it can be made to wrap around the whole cube if you like. Lofted mapping produces a result a little like wallpaper, but projected onto lofted 3-D shapes.

Besides props and scenery, the 3D Editor also allows you to assign backgrounds to scenes. The available choices for backgrounds are virtually unlimited, since in addition to automatically generated solid colors and gradients, you can also use custom bitmap files.

You can construct the other essential elements for your scenes, such as lighting and camera views, in the 3D Editor. You use light definition dialogs to assign RGB color components to lights, as well as luminance, hue, and saturation values. With spotlights, you can also set values for hotspot angle, falloff angle, show cone, and shadow. The camera definition dialog provides a choice of ten different stock lenses or assigning a custom focal length value.

You can also select the field of view (FOV) and roll angle, and decide whether or not to display a camera's show cone. The roll is the sidewise tilt of a camera, and you can animate this just like any other camera movement. You can include more than one camera for your scenes, and switch between them in any frame of an animation. This type of built-in editing can save considerable time, just as having many cameras on any movie or TV set is an extremely valuable resource. You can provide atmosphere effects, such as fog or distance cueing, using the 3D Editor. Fog is the more general atmosphere effect, which has a dialog to allow you to define its color and HLS properties just like lights.

You have the option of saving your 3-D models and animations in readable ASCII format for more rapid editing, for reference, or for aid in translating 3D Studio models into other software tools. This turns out to be a very important feature, because it provides a means for reusing work done for one animation in others. For example, the same movements can be retained, but the names of all the objects can be edited and replaced with other objects.

In short, once you have produced the movement for any animation, this identical movement can be reused with any other objects just by editing the object names in the .VUE file. The limitation is that these .VUE files can only be used with the Renderer in command line mode. The 3D Editor in v2 also allows you to explode objects. The size limit for 3-D models in 3D Studio is 64,000 vertices or points.

OTHER EDITORS

This 2-D graphics editor is useful for two main purposes—for creating shapes to be extruded by the 3D Lofter into 3-D prisms or cylinders of various kinds, and for creating special geometrical paths for animation objects to traverse.

The 2D Shaper creates shapes as 2-D bezier spline polygons. A host of editing conveniences is provided to simplify and speed up this development work. You can combine curved and straight segments, insert vertices

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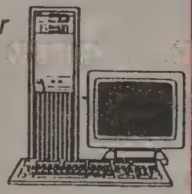

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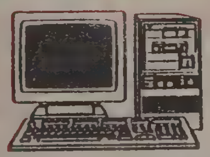

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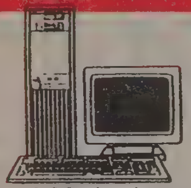

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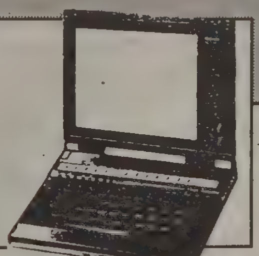

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into existing polygons, mirror a polygon, automatically generate circular arcs and regular polygons, etc. This is also the place where you can create patterns of written text in various fonts to be lofted into 3-D logos.

The 3D Lofter takes the 2-D shapes you have available and lofts or extrudes them into 3-D objects for use with the 3D Editor and Keyframer. Its power is that it not only can loft such objects along a rectilinear axis, or a circular one, as a lathe would, but along any path of curvature you provide. Although the lofting path may be a spline, the resulting 3-D mesh object does not consist of spline curves at all, but solely of interconnected triangular faces.

Those paths that are are built-in, and can be quickly generated based on selections made from an option dialog, are the Surface of Revolution and Helix paths. Powerful capabilities exist for modifying paths, for example, rotating them in three-dimensional space about their start vertices.

Five basic deformations can be performed on lofted objects: Scale, Twist, Teeter, Bevel, and Fit. Teetering refers to the ability to alter the rotation of each cross section of a model shape along its generation path. These rotations can be made around any axis, so that the variety of resulting "teetered" objects is quite enormous. Beveling refers to altering the unit size of nested polygons in opposite directions during the lofting process. The Fit technique produces some interesting and powerful results. Instead of a deformation spline, two closed polygons called the fit polygons can be used to generate unusual shapes in a process similar to having the polygons cut away from a solid block. One polygon controls shaping along the X-axis and the other along the Y-axis. In short, this means that you can create extraordinarily shaped objects very rapidly with the 3D Lofter as long as they have a single axis of symmetry.

The Materials Editor is the tool you use to edit entries in your library of surface materials or to create entirely new ones. Not only can a variety of parameters for color, shininess, and transparency be combined in almost endless variety, but you can also use various special effects, such as texture maps from external image files.

I mentioned earlier that texture maps with one of three alternative geometries can be applied to objects in the 3D Editor. Other important choices you have in the visual appearance of your objects are provided by the various shading modes, which include wireframe, flat, Gouraud, and Phong. The Gouraud and Phong shading provide the most realistic shading, but animation methods allow for such transformations as changing the shading mode on the fly—for example, to dramatize the emergence of new products from design groups.

Besides shading modes, the other special effects available include the Two-sided and Self-illum options. The Two-sided option ensures that in the case of open objects with one or more faces removed, both the interior and exterior will be shown with the same surface material. With the Self-illum option you can turn an object into a light source in its own right, with certain specular highlights, even though no shadows are cast on it. The Materials Editor also provides facilities for helping you manage your surface material libraries by combining them into various practical category combinations.

RENDERING

The 3D Studio Renderer does not have a special control screen all to itself, but is integrated with the 3D Editor and the Keyframer. It is also possible to run the Renderer in command line and batch processing mode.

Besides the advantage of being able to allow the computer to carry out the rendering of many images or animations unattended, the command line mode also has the important advantage of allowing you to use .VUE files to specify the movements and transformations. This opens up the important modular capability of reusing the same or similar movement routines with entirely different sets of objects. The limitation on using automated batch mode is primarily your disk storage capacity. All the files needed for rendering, as well as the results of the rendering, have to fit there. When rendering images or animations one at a time, only the files needed for each operation are needed at the time. You are able to swap them off to other media after each rendering.

The 3D Studio Renderer stores color in four different channels: red, green, blue, and alpha. The alpha channel stores 256 levels of transparency which are available to each displayed pixel. A very large range of screen resolutions are supported by the Renderer, including those as high as 24-bit graphics at 4096 x 4096.

When rendering, you have the option of using automatic shadow mapping. Your decision in this will often produce a large difference in rendering time, so that much development work can be done in "draft mode" with the shadow mapping turned off.

Besides the texture mapping already described, the Renderer also supports Bump Mapping, Reflection Mapping, and Opacity Mapping. The Bump Mapping technique lets you map the brightness values of images in such a way that they appear to register variations in the height of an object's surface. Reflection Mapping is a technique you can use to provide a photo-realistic enhancement with reflections mapped onto metallic and other smooth, shiny objects. Opacity Mapping refers to a technique similar to Bump Mapping, which uses the variations in transparency to give the effect of a porous texture.

THE KEYFRAMER

This is the real heart of 3D Studio, the tool you use to actually create the frames of your animations. Its power stems from the fact that only the key frames for transformations need to be constructed. The intervening frames are then generated automatically through "tweening."

Another big plus with a keyframing system

continued on page 148

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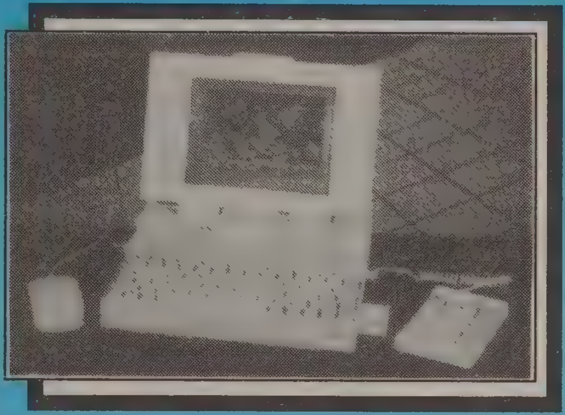

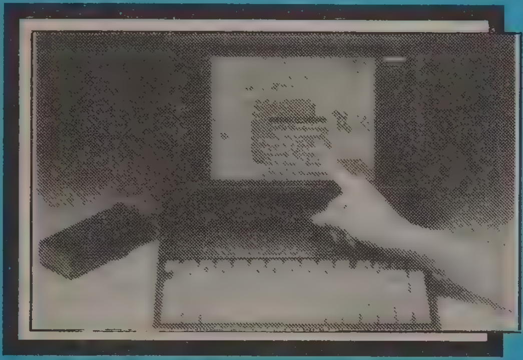

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Copyright © 1992 by David Morgenstern. All rights reserved. *David Morgenstern believes that computers and BMUG can cultivate a positive change in the world. He volunteers time at BMUG when he's not working his "regular job," writing, or prowling around the BMUG Bulletin Board. He can be reached through the BMUG office, AOL: daviD eM, CIS: 72030,1607, and Internet: davidm@sfsuvax1.sfsu.edu.*

Raines Cohen, one of the founders of BMUG, is spending the summer on a honeymoon bike tour across the US. He's visiting user groups along the way, and phoning in his progress to the weekly BMUG meeting. Marketing representatives are interrupted mid-demo to let everyone hear the latest road weather report from Cohen.

We are hoping to see him in the flesh, bearing bicycle and PowerBook, when he ends the trip at the August Macworld Expo in Boston. He plans to ride straight to the BMUG booth on the show floor. After the grueling Cascade Mountains, he should have no trouble with the ride down the escalator!

THE GOOD, THE BAD, AND THE INEXPLICABLE

There is no doubt that as technology moves forward in high gear, our society and culture are left eating silicon dust. But even when my world seems ready to join my hard drive in crashing, some BMUGer will pick me up—or pick up a car.

BMUG

We haul a truckload of paraphernalia up to our weekly meeting. After a recent meeting, we discovered that some joker had parked his car so that it completely blocked the parking lot exit. A crowd of BMUGers, parking officials, and passers-by stood around wringing their hands. Cliff Stoll, BMUG regular and author of *The Cuckoo's Egg* (and an upcoming book that he says combines astronomy and sex) cut to the essentials by persuading everyone on the scene to lift the car out of the way! Someone may have thought they were joining a nerd frat-house prank. BMUG—Isn't that Beta Mu Gamma fraternity?

Here are some items that caught my eye —I can't seem to fit all of them into my world view. Hopefully, you will have better luck!

- On my weekly drive across the bridge to the BMUG main meeting, I ponder the message on a prominent billboard: "Last year, more people bought Everex computers than voted for Frank Jordan." Jordan is the honorable mayor of San Francisco.

I have no idea what this ad is trying to say. Is it a commentary on the electoral system—so few people voted for the mayor that a welterweight manufacturer looks golden in comparison? Given the turnout in most American elections, I would guess that the clone shop down the street should do better than the entire vote count. Or is it an announcement for the next election? "Our computer ran better than the mayor, so we're going to enter a PC as a candidate four years from now." Scary thoughts!

- The search for perpetual motion has bankrupted many sincere but foolish investors over the centuries. The 21st Century equivalent has arrived on the scene—unlimited lossless data compression.

There are two types of compression: lossless and lossey. Lossless means that your data is not changed in the process of shrinking and expanding. You can repeat the process over and over, but the file should read identically each time. The best lossless compressors can cut a file's size in half.

Lossey methods throw out some of your data permanently when it's compressed. You might ask why anyone would want to lose even a single bit of hard-earned data? Since the compressor doesn't have to worry about every detail, it can really knock the kilobytes off a file's size. It depends on the data. If you have a database or text, it's critical to have each and every word and number correct, but perhaps not as critical in a movie zooming along at many frames a second.

Developers are busy finding the right compression algorithms for specific data types. The Joint Photographic Experts Group (JPEG) has spent years fine-tuning the way that high-resolution images will be shrunk. Apple is currently negotiating with SuperMac to get at a better compression technology for QuickTime digitized video. This would replace the current Apple Video (code-named Road Pizza) compression method.

All compression technology works on the principle that repeated or predictable combinations of characters can be replaced by a single character or formula. It's the science of computer shorthand, called information theory. Supposedly there's a theoretical minimum amount of space that will be needed to accurately represent a particular file.

The techno-hucksters are waving the holy grail of unlimited lossless data compression in front of the venture capitalists. They claim that you can have any data type shrunk down fifteen or more times without any loss of data. These highly secret methods somehow work outside the laws of information theory. They also claim to be able to recompress already compressed files for additional savings.

You don't have to be a genius to know something is fishy when the compression program only works when the salesman is demonstrating it. A Macintosh "version" is being shown around the Valley now, so investors beware. Anyone putting their dough into any of these voodoo compression schemes should run immediately to their head shrinker.

- On the dribbling edge of technology is Digital Deviations in San Jose, owned and operated by the irrepressible Chuck Farnams. Farnam's beyond-questionable taste is evident in his latest effort: The SeedyROM by CyberCowboy Films.

The CD is filled with sick QuickTime movies that he calls "performance pieces." The boundaries of eternal art are stretched to the breaking point with vignettes of Santa Claus throwing up, oozing surgical wounds with a jazz musical background, and the CleavageCAM. Chuck approaches his work as a democratic public service, with something to offend everyone. He's hard at work on the next volume in this SickTime series.

EVERY LITTLE BYTE HELPS!

When they're not busy squashing Video Display Terminal (VDT) legislation, computer manufacturers have gotten into the environmental act. A number of major manufacturers have joined in an effort to reduce the power required to keep our computer pals up and running. Apple has been doing some other noteworthy environmental actions.

You can tell new Apple products from those that have been sitting on the back room shelves by the packaging. Late last year, Apple switched from its traditional white cardboard packaging to brown (kraft) cardboard boxes. The manufacturing process of the brown

continued on page 133

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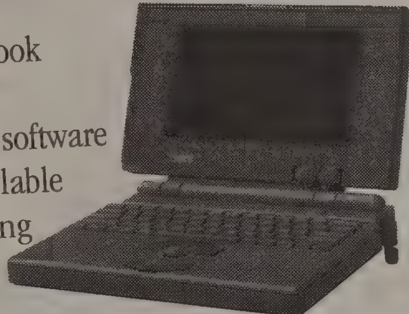

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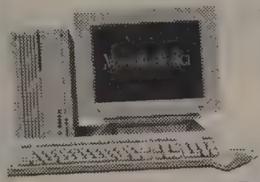

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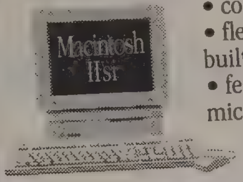

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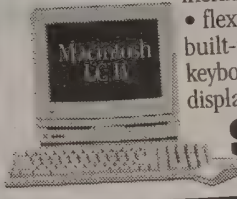

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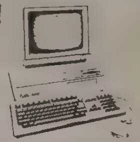

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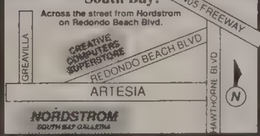

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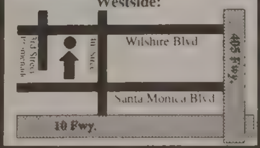

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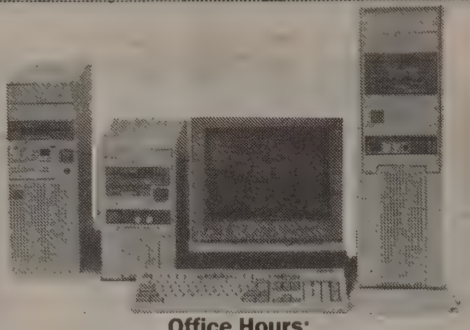

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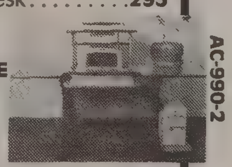

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continued from page 70

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Acron Technology, Inc.
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Advanced Integration Research, Inc.
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American Audio Video Research, Inc.
American Computer Products, Inc.
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Chimex Develop Corp.
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MicroTimes will showcase your store, your products, and your service. Here's your perfect opportunity to spotlight your store—tell your potential customers about the unique service your business offers, your in-house experts and the guidance they provide in such areas as LANs, Desktop Publishing, Systems Integrations, Accounting, and other specialties.

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MicroTimes 1992
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Fax: (510)934-7351
Deadline: October 1, 1992

Store Name:________________________________

Store Manager:________________________________

Address:________________________________

City:____________________ **State:**____ **ZIP:**____________

Phone:________________ **Fax:**____________________

What applications does your business specialize in, and who are your in-house experts for each specialty? (List up to three):

Specialty	**Expert**

What operating systems does your business support?

MS-DOS__ AmigaDOS__ Windows__ Windows NT__ UNIX (specify variety)________
OS/2__ Macintosh__ Other (specify)__________

List the three top-selling brands sold at your store in 1991:

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What special value-added services (e.g. service, training, support, warranties, return policy, etc.) does your business offer? (Please keep responses under 25 words or we will edit them to fit available space.)

____

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Are you a vendor-authorized sales, service, training and/or support source?

If so, please list up to five vendors (e.g. Sun, Novell, Hewlett-Packard, Autodesk) who have authorized your business to provide these services, and check the areas for which you're authorized.

Vendor	**Sales**	**Service**	**Training**	**Support**

I certify that all the statements made in this survey are true.

Name:____________________ **Title:**____________________

Signature:____________________ **Date:**____________________

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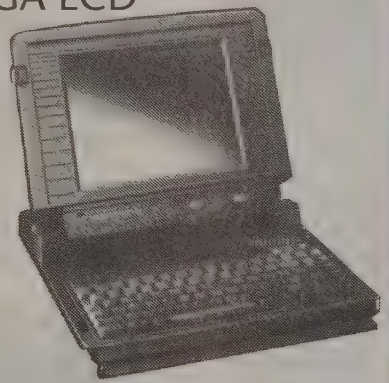

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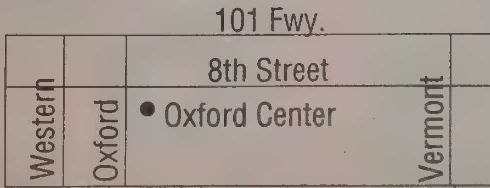

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486 DX-50 MHz..................$1749

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- Math-CoProcessor Socket
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386 SX-25 MHz

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- User Manual & Documentation
- FREE 3 Button Hi-Resolution Mouse

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Docking Station	195

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- FREE 3 Button Hi-Resolution Mouse

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386-40 DX w/64K Cache	1525
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486-50 DX w/256K Cache	2160

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OP 486/33 DX—64K Cache—w/CPU	520
OP 486/33 DX—256K Cache—w/CPU	550
OP 486/50 DX—256K Cache—w/CPU	729

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Orchid 486/50 w/256K Cache w/Orchid Fahrenheit 1 MB SVGA	1300

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OAK 256K VGA Card	39
PVGA - SVGA Card (Paradise WD90C30 chip set) w/1 MB	82
Diamond Speedstar 1 MB SVGA Card w/Hi-Color Chip/16 Mil Color	169
Diamond Stealth 1 MB (VRAM) Window Acceleration w/Hi-Color Chip	249
All Orchid Pro-Designer Card	Call
AT I/O w/Serial, 1P, 1G Port	13
IDE HD +FD Controller w/Cable	14
Super IDE HD +FD w/AT I/O w/Cable	19
Adaptec AHA—1542 B SCSI HD +FD Controller—(Card Only)	219
Adaptec AHA—1542 BK SCSI HD +FD Controller—w/Kit & Software	260
2400 Baud Smart - One Modem	40
2400/9600 Fax Modem Smart One	60

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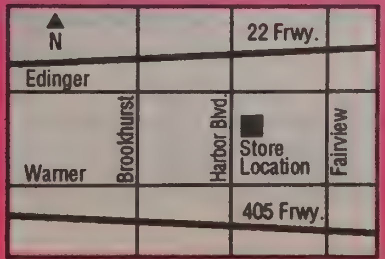

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continued from page 122

cartons consumes less energy, and doesn't produce as much hazardous waste as the bleached versions. Most of the new packaging uses already recycled materials.

Apple gets more than a warm fuzzy feeling with the new packaging. The brown cardboard boxes cost less than the white, while being just as sturdy. The brown color doesn't show the wear and tear of shipping so easily, so dealers (and their customers) don't complain about scuff marks as often. Everyone likes the new boxes better than the old ones. The environmental movement has been telling industries for years that these changes make good business sense!

PowerBook owners are always concerned with their batteries, but they may not be aware of the health problems relating to them. Rechargeable batteries are only good for a couple of years' use. These batteries contain heavy metals—lead or cadmium—which should not be tossed into landfills or incinerators. Apple has a program that allows users to return used computer batteries for recycling and disposal. Just take them into your local "Authorized Apple Service Provider," which is industry-speak for a dealer.

There is also a program to help customers recycle spent toner cartridges from their laser printers. All US Apple toner cartridges now include a prepaid shipping label in the cartridge box. The user repacks the old cartridge into the new box, attaches the label, and drops it in the mail. They will do this for any Canon-engine laser cartridge. You can contact their Customer Assistance Center (1-800-776-2333) to obtain a prepaid shipping label. For every cartridge returned in the US, a dollar will be donated to an environmental organization, either the National Wildlife Federation or the Nature Conservancy.

BYTES AND PIECES

Here are a couple of random tips:

• One of the great things about System 7 is that we don't have to worry about installing fonts, sounds, and desk accessories in the system. The new System file is really a special kind of folder and you can drag the icons of files into it. Older Macintosh systems need the assistance of a installation utility called Font/DA Mover to do the job. The Mover was considered by everyone to be the highest form of Macintosh software design—*Not!*

Suppose you've loaded a bunch of neat TrueType fonts into your System file and carelessly tossed away the suitcase files they arrived in. I know you would never do such a thing, right? System 7 extracts fonts and desk accessories out of the "old-fashioned" suitcases, and converts them to a new format. But what happens if you want to give someone still running System 6 these fonts, since the new format can't be used by older systems?

You don't have to panic, or even search for your old Font/DA Mover 4.1 program. Copy one of the suitcases from the Fonts disk of System 7. Open the suitcase and toss the fonts inside into the Trash. Go to your System file and copy the fonts you want into the empty suitcase. You may have to hold down the Option key, if it's the currently active system. Rename the suitcase, and you're done!

• I was recently trying to show a friend the wonderfulness of telecommunications. We were using his home computer and downloading something from the BMUG Bulletin Board. Everything was fine until his call-waiting decided to interrupt our session and destroy the download. Dueling technologies fighting for time on the copper wire!

The *70 command is the typical tone-disable call-waiting command. Unfortunately, most users have problems just placing it in front of their dial script. The call-waiting equipment wants you to send the disable command, and then after a moment send the phone number that the command is to be applied to. Your modem can do this by using a comma in the dial string (example, *70,555-5555), which creates a couple of seconds' pause. If this doesn't work, try two commas, two aspirin, and a glass of water.

The call-waiting is automatically turned back on when you hang up the phone. I detest this feature provided by our Baby Bells, and not just for its screwing up my modem demonstration. The busy signal was good enough for our ancestors...

SHAREWARE SPOTLIGHT

The game that is sweeping the BMUG office right now is the shareware Forty Thieves 2.1. It's a solitaire simulation by Eric Snider, and is beautiful in color. The game keeps a running tab of your scores and won/loss percentage. It's a rough one to win, and some calculating players are improving their scores by bailing out of games they know they can't win through the debugger. Shame, shame!

It's available on BMUG Games E1 disk.

WHAT IS BMUG?

BMUG is an educational, nonprofit, consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its thirtenn thousand international members. BMUG supports many Special Interest Groups (SIGs), a Bulletin Board System (BBS), a free HelpLine, a software library, weekly meetings, publications, and much more. BMUG also puts out a semiannual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC Berkeley campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center Street (a half block from the BART station) is open to the public 9 am–5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510)540-1742, and our fax number, (510) 849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with hundreds of disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *TV-ROM*™ a fantastic collection of public domain QuickTime videos.

Our sixteen-line BBS offers many of the latest versions of files in our software library, as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you can get in touch with us wherever you are and send mail to users everywhere! With our multiline capability, you can have access to BMUG almost twenty-four hours a day. It's easy to use, fun, and a great resource.

BMUG can be found on most electronic services. BMUG can also be reached through the international USENET network through bmug@garnet.berkeley.edu.

For further information about BMUG, please write to: BMUG, 1442A Walnut Street, #62, Berkeley, CA 94709. If you prefer to phone our business office, call (510)549-BMUG, or fax (510)849-9026. ■

RESOURCES

Calendar Of Events

AUGUST

August 15 WordPerfect Desktop Publishing Class. Glendale. Computer Education International. Call: (818)242-0828.

August 17–21 SCO Forum92: The International Technical And Marketing Conference. Santa Cruz. The Santa Cruz Operation. Call: 1-800-553-9939.

August 21 MS Word On The PC, Level I Class. Glendale. Computer Education International. Call: (818)242-0828.

August 22 Computer Show & Sale. CSU, Northridge. Richard James Corp. Call: 1-800-433-7469.

August 23 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

August 25–28 Intro To ISDN Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

August 27–29 The 3rd Annual Macintosh Summit Conference. Santa Barbara. UCSB Extension. Call: (805)893-4142.

August 28 Microsoft Excel On The PC Class. Glendale. Computer Education International. Call: (818)242-0828.

August 29 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

August 29 Lotus 1-2-3, Advanced & Macros Class. Glendale. Computer Education International. Call: (818)242-0828.

August 30 Computer Show. Sequoia Conference Center, Buena Park. Computer Marketplace. Call: 1-800-800-5600.

AUGUST 30

OPEN HOUSE FOR COMPUTER GRAPHICS AND GRAPHIC DESIGN PROGRAMS

UCLA Extension

UCLA's Extension Computer Graphics and Graphic Design programs offer a free open house on Sunday, August 30, beginning at 10 am. Discussions will cover growth and employment potential in these fields, with program instructors and counselors providing overviews of each certificate program's unique classes. This open house is intended for designers and artists who want to update their skills or for those considering a career change. UCLA, Dickson Art Center, Room 2160E. (213)206-1422.

AUGUST 29

COMPUTER SHOW

Pomona

Computer Marketplace computer shows feature hundreds of exhibits with thousands of products. Admission is $6.00 and shows are from 10:00 am to 5:00 pm. Los Angeles County Fairgrounds (Fairplex), Pomona. Call: 1-800-252-7927.

SEPTEMBER

September 12 Careers In Computer Graphics Seminar. Los Angeles. UCLA Extension. Call: (310)206-1422.

September 12 Computer Show & Sale. Anaheim Stadium (indoors). Richard James Corp. Call: 1-800-433-7469.

September 12 Intro To The IBM PC Class. Monrovia. The Organizers. Call: (818)303-3311.

September 13 Intro To The IBM PC Class. Monrovia. The Organizers. Call: (818)303-3311.

September 14–16 Database/Word Processing Software Workshop. Los Angeles. Symantec Training Group. Call: 1-800-786-8620.

September 14–October 21 Intensive WordPerfect 5.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

September 15–18 Effective Skills For Technical Managers Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

September 16 Beginning WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311.

September 16 Microcomputer Managers Association National Conference. New York. Microcomputer Managers Association, LA Chapter. Call: (213)243-6843.

September 16–18 Project Management Software Workshop. Los Angeles. Symantec Training Group. Call: 1-800-786-8620.

September 17 Understanding Spreadsheet Software Seminar. Westminister. SOCCC. Call: (714)946-1247.

September 19 Computer Show & Sale. CSU, Northridge. Richard James Corp. Call: 1-800-433-7469.

September 19 DOS Class. Monrovia. The Organizers. Call: (818)303-3311.

September 19 Intro To The IBM PC (In Spanish) Class. Monrovia. The Organizers. Call: (818)303-3311.

September 20 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-433-7469.

September 21 Beginning Lotus 1-2-3 Class. Monrovia. The Organizers. Call: (818)303-3311.

September 21–23 Pen-Based Expo. Los Angeles. DCI. Call: (508)470-3880.

September 21–24 An Intro To C++: Object-Oriented Programming And Design Course. Los Angeles. UCLA Extension. Call: (310)825-3344.

September 22–24 UNIX Expo: The Open Systems Show. New York. Bruno Blenheim, Inc. Call: (201)346-1400.

September 26 Beginning WordPerfect 5.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

September 26 Computer Show & Sale. Orange County Fairgrounds. Richard James Corp. Call: 1-800-433-7469.

September 26 Windows 3.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

September 29–October 2 Network Planning, Support & Management Course. Los Angeles. Learning Group International. Call: Kim Sisson, 1-800-421-8166.

September 29–October 8 OS/2: Comprehensive Hands-on Intro Course. San Diego. Learning Group International. Call: Kim

Continued

COMPUTER TRADE SHOW • WHOLESALE PRICES • OPEN TO THE PUBLIC

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L.A. Fairgrounds (Fairplex), Pomona

November 7, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

November 8, 1992 SUNDAY
Sherman Square Entertainment Center, Reseda

November 28, 1992 SATURDAY
L.A. Fairgrounds (Fairplex), Pomona

SPECIAL 2-DAY SHOW!
December 19 & 20, 1992
SATURDAY & SUNDAY
L.A. Fairgrounds (Fairplex), Pomona

ALL SAN DIEGO SHOWS HAVE BEEN CANCELLED

Calendar Of Events continued

Sisson, 1-800-421-8166.

OCTOBER

October 3 DOS Class. Monrovia. The Organizers. Call: (818)303-3311.

October 3 Intro To The IBM PC Class. Monrovia. The Organizers. Call: (818)303-3311.

October 3 Windows 3.1 Class. Monrovia. The Organizers. Call: (818)303-3311.

October 8 Beginning WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311.

October 10 Beginning Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

October 10–11 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

October 14–18 International Computer Music Conference. San Jose. ICMA. Call: (408)924-4675. Email: icma@sjsuvm1.bitnet.

October 17 Intermediate Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

October 17 Intermediate WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311.

October 20–23 AIX Expo '92. San Jose. International Technology Group. Call: (415)964-2565.

October 24 Lotus For Windows Class. Monrovia. The Organizers. Call: (818)303-3311.

October 25 Computer Swap Meet & Computer Fair. Fullerton College. NOCCC. Call: (714)998-8080.

October 26 Second Industry Symposium On Virtual Worlds Technology. HIT Labs, Washington. HIT & Univ. of Washington. Call: (206)543-5075.

October 26–30 A Preview Of 4.4 BSD UNIX Kernel Internals: Implementation, Tuning, And Networking Course. Los Angeles. UCLA Extension. Call: (310)825-3344.

October 31 Advanced Lotus Class. Monrovia. The Organizers. Call: (818)303-3311.

October 31 Advanced WordPerfect Class. Monrovia. The Organizers. Call: (818)303-3311. ■

SEPTEMBER 21–23

PEN-BASED COMPUTING EXPO

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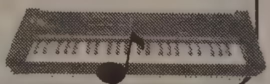

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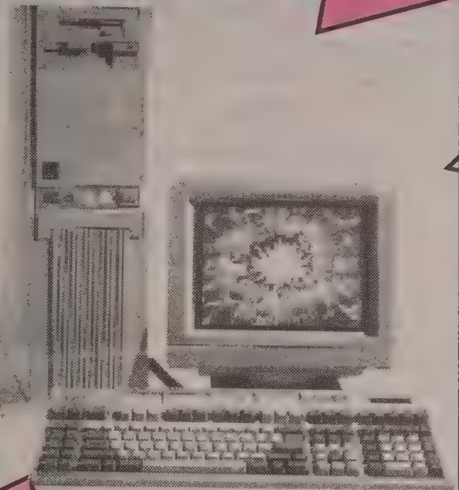

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- 101 Keyboard (Japan)
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- Operation Manual

* For DX2/50 MHz Add $199 (same config. as above)

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Deluxe Mini/Medium Tower Case	add $9/39
Deluxe Tower Case	add $59
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16 Bit Arcnet Card	59
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8 Port Active Hub	99
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Super VGA Card W/512KB	34
Hi-Res. Mouse & Software	14
16 Bit 800x600 VGA Card	29
CHINON 1.2MB FD	47
CHINON 1.44MB FD	43

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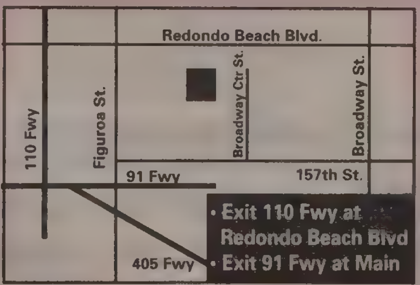

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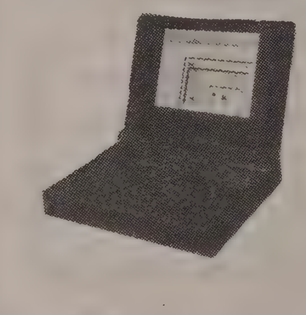

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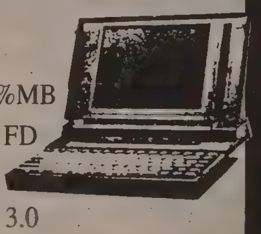

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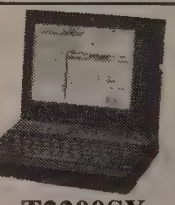

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MacShack BBS. (714)373-0656. 24 hrs., 2400. Mac, amateur radio, consumer interest. Sysop: Dude B. Narley. [Exp. #101.]

Magictek Computers. (714)939-9219. 8-N-1, 2400–19,200. Tech support programs and msg. board, updated software drivers, specials of the month online, largest shareware programs. [Exp. #99.]

Midnight Mission BBS. (714)848-6808. 24 hrs., 300–14,400. Large game and GIF file areas. Full access with call back. Sysop: Marty Strech. [Exp. #100.]

Music Insider BBS. (714)992-2721. 24 hrs., 1200/2400. For the pro: songwriter, musician, MIDI user, and player. Electronic "tip sheet," w/40+ major recording artists currently looking for material. Sysop: Douglas Boughter. [Exp. #100.]

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Perot Posse BBS. (714)962-1857. 9600. Supports Perot Campaign with files, msgs. Free. [Exp. #100.]

Sherlocktron. (714)492-0724. 8-N-1, 24 hrs., 2400. Sherlock Holmes BBS with lists of societies, publications, and purveyors. Sysop: Willis G. Frick. [Exp. #101.]

Software Gallery BBS. (714)991-4019. 7 am–10 pm. 1200/2400/9600/14,400. Games, graphics, email, utils, adult. Free. Sysop: Joe Engebretson. [Exp. #99.]

The Storage Power BBS. (714)952-8666. 8-N-1, 300/1200. Specializing in Radio Shack models, I, II, III, IV, 12,16, and 6000. [Exp. #101.]

Systems Support Group BBS. (714)631-6740. 24 hrs., 1200/2400/9600. Programmers, power users, NetMail, and shareware. 1.2GB online, no fee. Sysop: Joe Winlock. [Exp. #99.]

Trixie's Doghouse. (714)499-0822. 8-N-1, 11 pm–7 am, 300/1200/2400. Specializing in topics related to pets. Full access with callback. Sysop: Jason MacDonald. [Exp. #100.]

WinSIG BBS. (714)363-9802. 24 hrs., Windows 3.xx shareware. Sysop: Firas Bushnaq. [Exp. #100.]

805

The Delphic Oracle. (805)582-9004. All-gaming BBS: play RPGs, play-by-email games, "Empires at War." Find modem-game players. Gamemasters, players wanted. Free access. Sysop: Martin H. Fryc. [Exp. #101.]

Farpoint BBS. (805)582-1621. 8-N-1, 24 hrs., 1200/2400/9600/14,400. IBM shareware, adult files & GIFs, NETMail, online games, 700+MB. Free after reg. Sysop: Gary Bisner. [Exp. #101.]

Lynzie's Motherboard. (805)482-5776. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, 2GB, email, public forums, library, and matching. More local numbers available online. Sysop: Lynzie Flynn. [Exp. #101.]

Modem Butterfly. (805)581-0700. 8-N-1, 1200/2400. 32 lines, CB mode conf, color GIFs, online contests, parties. Free trial. [Exp. #101.]

Revelation BBS. (805)296-1218. 24 hrs., 1200–38,400. No fees. Sysop: Justin Case. [Exp. #101.]

818

African American BBS! (818)793-9155. P-Funk online, sports, issues, health, business. Check it out. Free. Sysop: Jeffery Mitchell. [Exp. #101.]

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AOS—Avatar Online Systems. (818)969-8BBS. 8-N-1. 32 lines, chat, games, tutors, etc. Free trial, 10% discount when referring to MicroTimes on application. Sysop: Nancy J. Teppler. [Exp. #101.]

Asia America Electronic Bulletin Board Service. (818)284-4519. Specializing in bridging the gap between Asian and American cultures, with a focus on business. [Exp. #99.]

AutoComp BBS. (818)982-8671. 24 hrs., 300/1200/2400. Automobile classifieds. Free access. Sysop: J. Macoy. [Exp. #99.]

AutoComp Computer Classifieds. (818)767-8087. 24 hrs. A complete classified BBS. Enter your ads, be sure to check personal ads section. Free access. Sysop: J. Macoy. [Exp. #101.]

Bad-Boy's BBS. (818)946-9304. 24 hrs., 2400/9600/14,400. Fido 1:102/851.6. No fees. Sysop: Brandon L. Heess. [Exp. #101.]

BBB-BBS. (818)982-7529. 2400/9600. Multiline chat, online games, netmail, large files section, GIFs, and shareware. Sysop: Mike Sobetzko. [Exp. #101.]

The Board. (818)366-8874. 8-N-1, 300/1200/2400. Email, shareware, job opportunities listed. Free access. Sysop: Ed Jeffers. [Exp. #101.]

The Drawing Board. (818)965-6241. 8-N-1, 24 hrs., 1200/2400/9600. DTP, graphics, messages, and PD file sections. Sysop: Char Rice. [Exp. #99.]

Eclipse Systems Network. (818)848-1714. 300/1200/2400. Two lines, adult material, GIFs, games. Sysop: Tony Baron. [Exp. #101.]

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KBBS Los Angeles. (818)98 3875. 8-N-1, 300/1200/240 9600. LA's busiest, wit 32,000-channel chat, 13,000 files, 32 lines, parties, ov 3000 members. [Exp. #99.]

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You can update or renew your listings at any time. If yours is missing, send us a new one! Send your listing information to: US Mail should go to: MicroTimes User Group, 3470 Buskirk Ave., Pleasant Hill, CA 94523. **Faxes** are welcome at (510)934-2417 or (213)851-8303. **Email** can be sent to: microx@well.sf.ca.us. Or MCI:MICROTIMES.

ASSOCIATIONS

Black Data Processing Association, LA Chapter. Meetings: 4t Tues., 6:30 pm, ULTC, 7226 S. Figueroa St., Los Angeles. Cal (310)673-6522 or 1-800-727-BDPA. [Exp. #99.]

Data Processing Management Association. Meetings: 2nd Thurs 7:00 pm. An organization composed of all levels of manageme personnel who have an interest in the field of informatio processing. Call: (310)549-9680 or (213)225-9210. [Exp. #102.

Independent Computer Consultants Association, Los Angel Chapter. Meetings: 1st Thurs., 6:00 pm. Prepaid reservation, $2 or at the door, $35. The LA chapter provides referral services. Ca (213)872-1811. [Exp. #104.]

Microcomputer Managers Association, Los Angeles Chapter. forum for the discussion of issues relating to implementing a supporting microcomputer technology. Call: (213)243-6843. [Ex #100.]

Orange County Association Of PICK Professionals. Meetings: 3 Wed., 6:00 pm, Claim Jumper Restaurant, 18350 Brookhurst S Fountain Valley. Dinner: Members, $20; nonmembers, $2 Without reservations add $5 additional. Call: (714)641-6347. [Ex #102.]

The Software Council Of Southern California (SCSC). Nonpro organization for software developers to have a (peer-to-pee networking and educational forum on industry issues. Ca (310)328-0043. [Exp. #104.]

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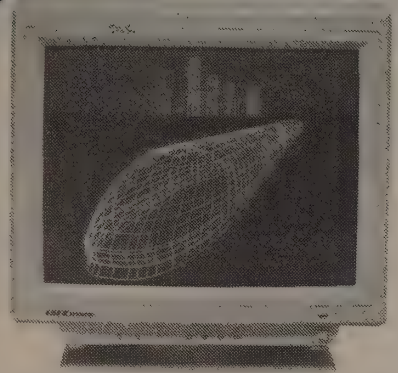
PC MAGAZINE EDITORS' CHOICE



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USER GROUPS

ACCOUNTING

L.A. County Cougar Mountain Accounting Software User Group. Call: (818)788-2627. [Exp. #101.]

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wed., 7:30 pm, Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Many SIGs, rookies, monthly PD disks. Call: Kip Hammond, (310)390-3010. [Exp. #102.]

San Fernando Valley Amiga User Group. Meetings: 2nd Tues., 7:00 pm, Meeting Room, Fallbrook Mall. Call: Tony, (818)985-0476. [Exp. #103.]

SBAD—South Bay Amiga Dudes/Dudettes. Meetings: 1st Thurs., 7:00 pm, South Bay Contemporary Museum of Art, Torrance. Call: Gordon Barbay, (310)376-7329. [Exp. #101.]

South Orange Commodore Klub—SOCK. Meetings: 3rd Sat., 9:00 am, Computer Guild, Suite 1003, 24001 Via Fabricante, Mission Viejo. New Location. Supports Commodore and Amiga, new users SIG. Call: Don, (714)830-2430. [Exp. #102.]

APPLE

Orange Apple Computer Club. Meetings: 1st Sat., 9:00 am, Orange Coast College, Chemistry Lab. Apple II supported. Call: (714)731-9243. [Exp. #104.]

Original Apple Corps, Apple II User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #104.]

Tri-City Apple Users Group. Meetings: 3rd Thurs., 7:00 pm, Pasadena Central Library, 285 E. Walnut St. Friendly Apple II experts. Call: (213)258-0281. [Exp. #102.]

Valley Apple Computer Club. Meetings: 3rd Tues., 7:30 pm. Cleveland High School, 8140 Van Alden, Reseda. Apple II, II+, IIc, IIe, and IIgs. No Macs. Call: Bill, (818)988-1752. [Exp. #104.]

ATARI

ATESIG—Atari 8-bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for Model Railroad applications. Call: (310)430-5433. [Exp. #100.]

RAM Atari ST User Group Of Ventura County. Meetings: 3rd Wed., 7:30 pm, Call: Tim, (805)389-0059 or write PO Box 112, Camarillo, CA 93011. [Exp. #102.]

South Bay Atari Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd. Active since 1985, novices & all skills welcome. Call: (310)375-4839. [Exp. #102.]

CAD/CAM

Los Angeles Area AutoCAD User Group. Meetings: 4th Wed., 6:30 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia Blvd., Burbank. Meetings feature tutorials, Q&As, demos, hands-on, BBS, and newsletter. Call: M. Berman, (818)762-9966. [Exp. #100.]

COMMODORE

C128 West Commodore 128 User Group. Meetings: Covina & Santa Monica. Free membership. Large disk library. Call: John, (818)331-1589; Paul, (818)892-3859; BBS, (714)598-1755 FidoNet. [Exp. #101.]

Commodore Helpers Of Long Beach. Meetings: 2nd Sat., 9:00 am. St. Timothy's Lutheran Church, Woodruff and Arbor in Lakewood. Supports 64/128 models. Call: Tom Hoy, (310)424-0508. [Exp. #99.]

C-TUG (Commodore Technical User Group). Meetings: Western Federal Savings And Loan, 2233 N. Tustin Ave., Orange. Speakers, demos, help with any Commodore and Amiga questions. Call: Lou Palush, (714)532-1802. [Exp. #104.]

Orange County Commodore Club. Meetings: 4th Sat., 11 am, Fidelity Federal Bank, 19900 Beach Blvd., (Newland Shpg. Ctr.) Huntington Beach. Call: Mike Moore, (714)668-9715. [Exp. #99.]

South Bay Commodore Users Group. Meetings: 3rd Thurs, 7:00 pm. SEC Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor). Free and open to all who use or own Commodore computers and to those who would like to receive or exchange information on programs, applications, or hardware. Call: (310)324-8357. [Exp. #102.]

CORELDRAW

Association Of Corel Artists & Designers, LA Chapter. Meetings: Next to last Tues., 7:00 pm, Glendale Federal Bank Building, 401 N. Brand Blvd. An international nonprofit user group network for anyone using or interested in CorelDraw. Call: (310)452-5637. [Exp. #102.]

DESKTOP PUBLISHING

Southern California Ventura Publisher User Group (SC–VPUG). Meetings: Last Tues., 7:00 pm, 401 N. Brand, Glendale, Glendale Federal Bank Building. Product demos, Q&As, library resources. Call: (818)955-5830. [Exp. #101.]

VICUG—DTP (Valley IBM/Compatibles User Group—Desktop Publishing). Meetings: 1st Fri., 7:00 pm, Union Federal Savings Bank, 13330 Ventura Blvd., Sherman Oaks. Membership fee $25/yr or $3 at the door. Call: Harry Tischler, (818)997-1470. [Exp. #99.]

IBM & COMPATIBLES

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Christ King Lutheran, 2706 W. 182nd St., Torrance. Visitors welcome. Call: (310)542-4996. [Exp. #99.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School Cafeteria. Meetings are free and there are always live presentations and giveaways. Call: (310)473-6668. [Exp. #104.]

NOCCC Business & Spreadsheets SIG. Meetings: 1st Sun., 11:00 am, Chapman College, City of Orange. One of 22 SIGs. Call: (714)998-8080. BBS: (714)962-1857. [Exp. #103.]

Orange Coast IBM PC User Group. Meetings: Last Sat., 9:00 am. Orange Coast College. Speakers, BBS, software library, newsletter, and SIGs. Everyone welcome. Call: (714)843-2048. [Exp. #99.]

Pasadena IBM User Group. Meetings: 3rd Wed., 7:00 pm, 2184 N. Lake Ave., Altadena. Speakers on hardware/software, SIGs, library, and newsletter. Call: Steve Bass, (818)795-2300. [Exp. #99.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)496-9699. [Exp. #104.]

Valley Computer Club. Meetings: 1st Wed., 7:00 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia, Burbank. BBS, PD library, SIGs, newsletter. All welcome. Call: (818)842-3707 or (213)227-9684. [Exp. #99.]

Ventura PC User Group. Meetings: 3rd Sat., 9:00 am, Poinsettia Pavilion, Canada Larga Rm., 3451 Foothill Rd., Ventura. Guests welcome, no charge for attendance. Call: Kenn Ritza, (805)644-6955. [Exp. #99.]

VICUG (Valley IBM/Compatibles User Group). Meetings: 4th Fri., 7:00 pm, Security Pacific Bank, 14801 Ventura Blvd., Sherman Oaks. Membership fee $25/yr or $3 at the door. Call: Harry Tischler, (818)997-1470. [Exp. #99.]

KAYPRO

West Los Angeles Kaypro User Group/KAYOS Kaypro User Group. Meetings: 4th Mon. of even months, 6:30 pm, El Segundo. Call: Margot, (310)379-8339. [Exp. #101.]

K-MAN

Southern California KnowledgeMan User Group. Meetings: 1st Wed., 7:00 pm, Honda North America, Bldg. 300, 700 Van Ness Ave., Torrance. Call: (213)662-9910. [Exp. #100.]

MACINTOSH

The American Film Institute Mac User Group (AFIMUG). Meetings: 2nd Mon., Apple Lab, AFI, Hollywood. TV, film, and video. Call: Dave Chadderdon, (213)856-7743. [Exp. #99.]

Los Angeles Macintosh Group (LAMG). Meetings: 3rd Thurs., 7:30 pm, Dept. of Water & Power, 111 N. Hope St. So. Cal's largest all-Mac user group meetings, monthly magazine, classes, PD software, and more. Call: (310)278-LAMG. [Exp. #100.]

MacValley User Group. Meetings: 1st Wed., 7:30 pm, Wilkinson Senior Center, 8956 Vanalden, Northridge. Meetings, new product demos, newsletter, PD and shareware software, and more. Membership dues, $30/yr. Visitors welcome. Call: Bob Campbell, (818)784-8666. [Exp. #101.]

Orange Apple Computer Club. Meetings: 1st Sat., 9:00 am, Orange Coast College, Chemistry Lab. Macintosh supported. Call: (714)731-9243. [Exp. #99.]

Original Apple Corps, Macintosh User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #104.]

San Gabriel Valley Mac Users Group. Meetings: 1st Thurs., 7:30 pm, Pasadena Central Library Auditorium. Call: (213)684-ICON. [Exp. #101.]

West Orange County Macintosh User Group (WOCMUG). Meetings: Last Tues., 7:00 pm, F&M Bank, 12535 Seal Beach Blvd., in the Rossmoor Shopping Center. Visitors always welcome! Topics for beginning to advanced users. Call: (310)493-1240. [Exp. #100.]

Whittier Area Mac User Group. Meetings: 2nd Sat., 10:00 am, Granada Heights Friends Church, La Mirada. Call: (310)947-2447. [Exp. #99.]

NeXT

Southern California NeXTSTEP User Group. Meetings: Throughout LA County. Call: Mike Mahoney, (310)985-1550 or Bob Desharnais, (213)343-2056. [Exp. #100.]

TEXAS INSTRUMENTS

TI/944A Home Computer User Group. Meetings: 2nd Mon., 7:00 pm, Pomona First Federal, 9090 Central Ave., Montclair. Monthly newsletter, demos, and fairware. Call: (714)627-3403. [Exp. #102.]

UGOC. Meetings: 2nd Mon., Fidelity Federal, 13820 Seal Beach Blvd. Call: Stan, (714)892-8218. [Exp. #102.]

THEOS

THEOS User Group. Call: Fred Bellemy, (805)965-0265. [Exp. #99.]

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UNIX User Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Learnings Center, 1231 E. Dyer Rd., Santa Ana. Call: Vince, (714)556-1220, ext. 126. [Exp. #100.]

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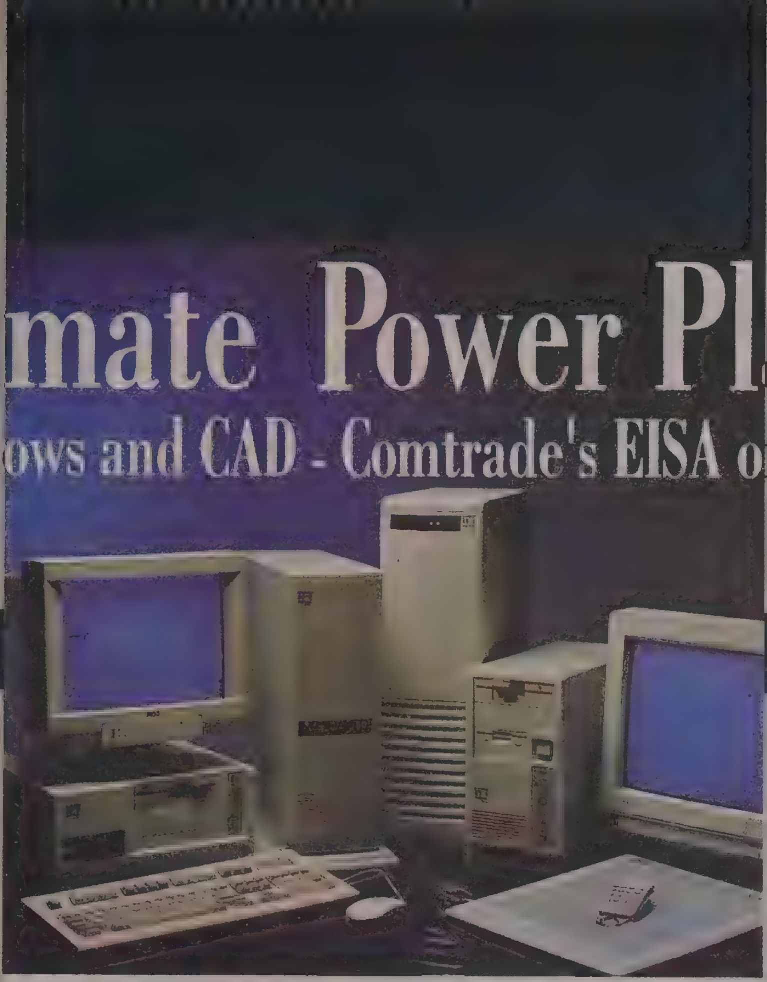

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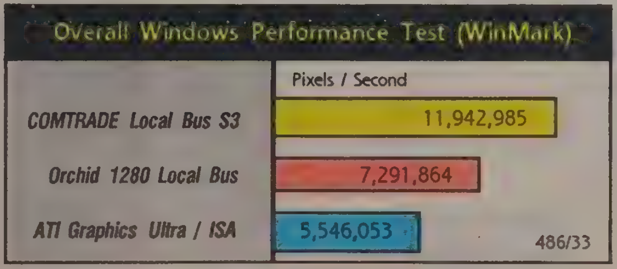

Source: Computer Shopper, July 1992. Local Bus Video Review. Page 184.

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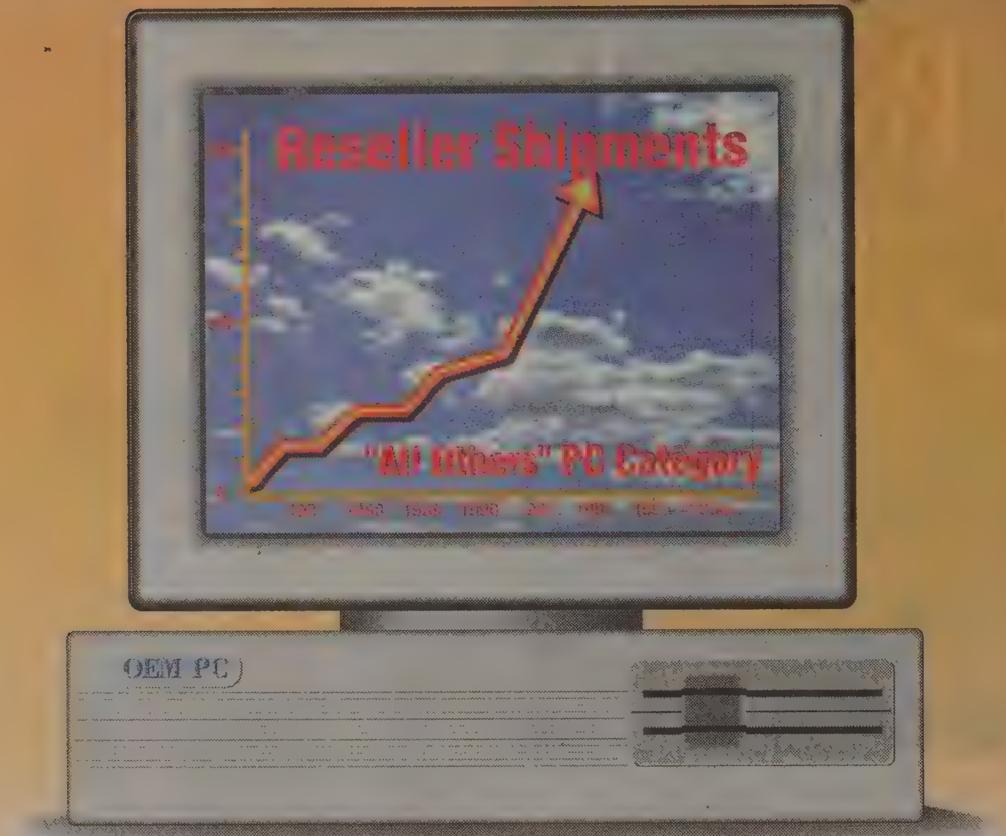

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A2	Marketing PC's in a commodity/price war environment
A3	Build or buy- resellers look at the new "OEM" environment
A4	Trade and marketing between the USA and Hungary Chairperson: Andy Hadju, Control, Inc.
Tuesday Sept. 22	**Keynote Speaker: Lucy Baney, VP, Software Systems Market Development of IBM**
B1	East-West Partnerships
B2	Creating Company & brand identity in a crowded marketplace
B3	Trade and marketing between the USA and Russia Chairperson: Tamirian I. Gasanov
B4	Channel strategies for technology entrepreneurs
Wednesday Sept. 23	**Keynote Speaker: Richard Fade, Director, Far East OEM Sales of Microsoft**
C1	Beyond the Windows PC: Alternative Operating Environments
C2	Emerging technologies for the next ten years
C3	FCC Regulations and Compliance with Federal Agencies
C4	Notebook Revolution: Nomadic computing comes of age
Thursday Sept. 24	**Keynote Speaker: Industry Specialist**
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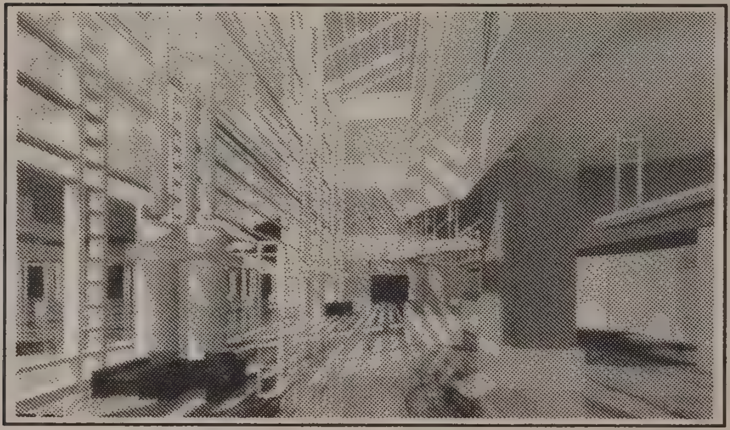
continued from page 120

is that it is often relatively easy to speed up and slow down the movement in an animation you're developing. To speed it up, you can just decrease the number of frames between keys. To slow it down, you increase them. In a tool without keyframing, you would have to either throw out frames you'd already made or make new ones. The key frames are portrayed on the screen with track grids that allow various editing and manipulation operations. Every object has a separate track for each type of transformation that it is capable of. For example, there are separate tracks for rotation, position change, and morphing.

The 3D Editor includes all the facilities you need to "make a scene," letting you create not only a cast of 3-D animation characters, but all their props and settings.



If you only need to see a wireframe version of your animation's movements, there are playback control icons to facilitate doing that. As a convenience there is also a playback icon on the Key Info and Track Info dialogs so that you can test changes while the dialog box is still open. There are also icon buttons for moving just a single frame back or forward, as well as for instant rewind. The Keyframer is the heart of 3D Studio and a major source of its power and appeal.

HIERARCHICAL LINKS

A very strong feature of 3D Studio is its capability to link various objects together for different transformations, and also to provide various series of links over which the transformations can be transmitted.

For example, you can rather easily get the effect of the transmission of movement and rotation over the links of a chain of the vertebrae in a spine. You can also accomplish this by a provision for inheriting links that involves an editing technique called Dup Links; this allows you to assign the links and create the new nodes at the same time. The enormous difference between making frame movements by moving whole assemblies of objects at once, rather than each one individually, cannot be overemphasized. Besides objects, you can also provide links with cameras and lights, which means that operations like tracking moving objects with spotlights and cameras are done virtually automatically.

INSTANCES AND DUMMIES

The Keyframer also has efficient ways of making clones of objects, including instances and dummies.

Instances are geometrical duplicates whose motion can be different from their master object but whose geometry cannot. They are only visible in the Keyframer because they really only consist of key data.

Dummies are objects that are invisible at render time, but are useful for coordinating the motion of other objects linked to them. For example, if you want objects to rotate about a common center, but there is no animation object at this central point, you can put a dummy there that forces the objects linked to it to move with it.

USING 3D STUDIO WITH OTHER AUTODESK PRODUCTS

Importing and exporting 3-D geometry between 3D Studio and AutoCAD is accomplished with the latter's .DXF file. There are some limitations involved in doing this, and some additional editing is usually needed to make the models fully usable for animation. But in Studio 3D v2, this capability has been improved considerably. On the whole, this capability works especially well for creating things like architectural walkthroughs from architectural designs prepared with AutoCAD.

3D STUDIO AND ANIMATOR PRO

Animator Pro is the tool to use for joining and compositing animations made with 3D Studio. The animated cell capability of Animator Pro is also very useful for embedding 2-D animated routines within 3-D animations, a useful option when it's too resource-intensive to handle them in 3-D. It is especially suitable, for example, for handling animated texture mapping. An example of this might be the depiction of something on a motion picture screen or TV within the animation scene.

CONCLUSION

As you may have already realized, it would be hard to find a desktop animation tool to top 3D Studio. The only place you might fault it is in the user interface design. But even if it may not be your idea of the best possible user access design, you get used to it rather easily.

I tested 3D Studio on a 33MHz 486 machine with a 256K cache and the performance seemed just about right. On a machine of any lower power, the results may be less than what you'd consider satisfactory.

The only real question is where Autodesk will take this program next. In any case, those lucky enough to own a copy of this latest release are no doubt busy putting all the great new features to work creating the next generation of artful animations. ■

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Local Bus 486DX-50
$1630.00(1570.00)
Local Bus 486-DX-33
$1365.00(1310.00)

* Orchid 486DX-33/DX-50 M/B
* 256K High speed Cache
* 4MB Memory on board expandable upto 32MB
* TEAC 1.2M & 1.44M FDD
* IDE Floppy & Hard Disk Controller
* Orchid IIs-D 1MB **Local Bus** VGA Card
* 2 Serial / 1 Parallel / 1 Game
* CS-35 Mid-Vertical Case
* 230Watts UL Power Supply
* Focus 6000 Keynboard

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U.S.A. MADE VEGA 486

	Regular Pricing / CASH PRICE
486DX-50V	$1255.00(1265.00)
486DX2-50V	$1215.00(1160.00)
486-DX-33V	$1200.00(980.00)

- VEGA486DX-50/DX2-50/DX-33 M/B
- 256K High speed Cache (64K for 33MHz)
- 4MB Memory on board expandable upto 64MB
- TEAC 1.2M & 1.44M FDD
- 2 Serial / 1 Parallel / 1 Game
- CS-35 Mid-Vertical Case
- 230Watts UL Power Supply
- Focus 6000 Keynboard

EISA 486DX-50	$1975.00(1905.00)
EISA 486-DX-33	$1730.00(1665.00)

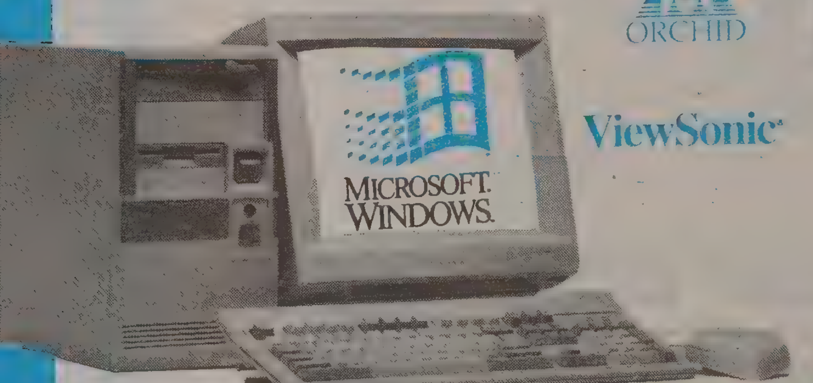
- VEGA486DX-33 DX-50 M/B
- 256K High speed Cache
- 4MB Memory on board expandable upto 32MB
- TEAC 1.2M & 1.44M FDD
- **32Bit** DTC2290 **EISA** IDE Controller
- **32Bit** Orchid IIs-E 1MB **EISA** VGA Card
- 2 Serial / 1 Parallel / 1 Game
- CS-35 Mid-Vertical Case
- 230Watts UL Power Supply
- Focus 6000 Keynboard

	Regular Pricing / CASH PRICE
486DX-50U	$1255.00(1205.00)
486DX2-50U	$1155.00(1100.00)
486-DX-33U	$960.00(920.00)

- UMC 486DX-50/DX2-50/DX-33 M/B
- 256K High speed Cache (64K for 33MHz)
- 4MB Memory on board expandable upto 64MB
- TEAC 1.2M & 1.44M FDD
- 2 Serial / 1 Parallel / 1 Game
- CS-35 Mid-Vertical Case
- 230Watts UL Power Supply
- Focus 6000 Keynboard

386DX-40	$595.00(570.00)
386-DX-33	$575.00(550.00)

- 386DX-40/DX-33 M/B
- AMD 80386DX-40/DX-33 CPU
- 64K High speed Cache
- 4MB Memory on board expandable upto 32MB
- TEAC 1.2M & 1.44M FDD
- 2 Serial / 1 Parallel / 1 Game
- Mini-Vertical Case
- 200Watts Power Supply
- Focus 6000 Keynboard



Local Bus 486-DX-33	$1225.00(1175.00)

- 64K High speed Cache
- 4MB Memory on board expandable upto 32MB
- TEAC 1.2M & 1.44M FDD
- IDE Floppy & Hard Disk Controller
- S3 1MB **Local Bus** Graphics Accelerator
- 2 Serial / 1 Parallel / 1 Game
- CS-35 Mid-Vertical Case
- 230Watts UL Power Supply
- Focus 6000 Keynboard

386DX-25	$455.00(435.00)
386SX-25	$405.00(390.00)

- 386DX-25/SX-25 M/B
- AMD 80386DX-25/SX-25 CPU
- 1MB Memory on board
- TEAC 1.2M & 1.44M FDD
- 2 Serial / 1 Parallel / 1 Game
- Mini-Vertical Case
- 200Watts Power Supply
- Focus 6000 Keynboard

REFER TO NEXT PAGE FOR ADDITIONAL UPGRADES SELECTIONS!

From the Editorial staff of Computer Shopper, July 1992

"...If you want excellent results, at one of the best price points you can find, local bus systems like the Essence/Orchid combination deserves serious attention. *See Page 188 in Computer Shopper, July Issue 1992.*

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Our powerfull and advanced designs have satifsfied many Fortune 500 companies, corporations, and educational institutions. ***ESSENCE*** GROUP - Unconditional 30 day money back gives buyers confidence in our systems and

which is a value to you.

MONITOR + VIDEO UPGRADES:

For EISA & Local Bus Systems:

	Regular Pricing / CASH PRICE
ViewSonic 6E 14" Non-Interlaced Monitor	$350.00(337.00)
ViewSonic 5E 14" Non-Interlaced Monitor	$418.00(400.00)
ViewSonic 6FS 15" Non-Interlaced Monitor	$619.00(595.00)
ViewSonic 7 17" Multi-Frequency Monitor	$1070.00(1030.00)
ViewSonic 8 20" Multi-Frequency Monitor	$1645.00(1580.00)

For ISA Systems:

12" Monochrome Monitor w/MonoGraphics Card	$102.00(98.00)
14" Monochrome Monitor w/MonoGraphics Card	$120.00(115.00)
14" MonoVGA (Paper-white) Monitor w/16-bit VGA Card (256K)	$159.00(153.00)
14" Mini-Micro MM1468 VGA Color Monitor (.41dp) w/16-bit VGA Card (256K)	$273.00(262.00)
14" CTX-5468A SuperVGA Color Monitor (.28dp) w/TVGA-8900C 1MB VGA Card	$360.00(347.00)
14" CTX-5468NI Non-Interlaced Color Monitor (.28dp) w/TVGA-8900C 1MB VGA Card	$395.00(380.00)

Call for our complete Monitors & Hard Drives Price List

	Regular Pricing / CASH PRICE
14" ViewSonic 6E Non-Interlaced Color Monitor (.28dp) w/TVGA-8900C 1MB VGA Card	$420.00(405.00)
14" ViewSonic 5E Non-Interlaced Color Monitor (.28dp) w/TVGA-8900C 1MB VGA Card	$488.00(468.00)
w/Orchid ProDesigner IIs 1MB Hi-Color VGA Card	$556.00(540.00)
15" ViewSonic 6FS Digital Auto-Tracking Flat-Screen Monitor (.28dp) w/Orchid ProDesigner IIs 1MB Hi-Color VGA Card	$764.00(735.00)
w/Orchid Fahrenheit 1280 1MB Graphics Accelerator	$840.00(815.00)
17" ViewSonic 7 Digital Auto-Tracking Monitor (.28dp) w/Orchid Fahrenheit 1280 1MB Graphics Accelerator	$1300.00(1250.00)
w/ATi Graphics Vantage (1MB)	$1298.00(1250.00)
w/ATi Graphics Ultra (1MB)	$1460.00(1405.00)

Hard Disk Subsystem & Other Options (w/Systems):

40MB IDE HDD	$198.00(190.00)
80MB IDE HDD	$250.00(240.00)
120MB IDE HDD	$320.00(308.00)
200MB IDE HDD	$490.00(470.00)
MicroSoft DOS 5.0	$37.00
MicroSoft Windows 3.1 w/Mouse	$55.00
Internal 2400Buad Data Modem	$36.00
Internal 9600Baud Fax Modem	$66.00

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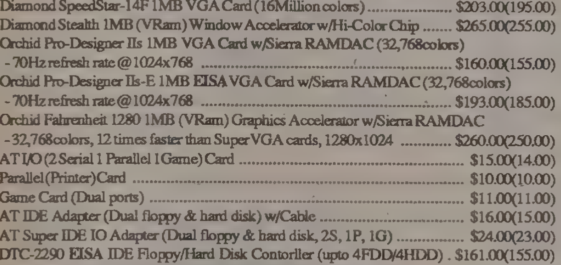
TEAC 1.44MB FDD (3.5") w/Mounting Kit	$56.00(54.00)
TEAC 2.88MB FDD (3.5") w/Mounting Kit & Controller	$166.00(160.00)
Panasonic 1.2MB FDD (5.25")	$59.00(56.00)
Panasonic 1.44MB FDD (3.5") w/Mounting Kit	$55.00(52.00)
Conner CP-3000 40MB IDE HDD (29ms)	$203.00(195.00)
Conner CP-30084 80MB IDE HDD (17ms)	$257.00(247.00)
Conner CP-30104 120MB IDE HDD (17ms)	$320.00(308.00)
Conner CP-3204F 210MB IDE HDD (16ms)	$560.00(540.00)
Maxtor MX-7080A 80MB IDE HDD (17ms)	$275.00(265.00)
Maxtor MX-7080S 80MB SCSI HDD (17ms)	$280.00(270.00)
Maxtor MX-7120A 120MB IDE HDD (15ms)	$328.00(315.00)
Maxtor MX-7120S 120MB SCSI HDD (15ms)	$343.00(330.00)
Maxtor MX-7213A 213MB IDE HDD (15ms)	$494.00(475.00)
Maxtor MX-7213S 213MB SCSI HDD (15ms)	$572.00(550.00)
Maxtor LXT-340A 340MB IDE HDD (13ms)	$745.00(715.00)
Maxtor LXT-340S 340MB SCSI HDD (13ms)	$905.00(870.00)
Maxtor XT-8380E 338MB ESDI HDD (13.5ms)	$1020.00(980.00)
Maxtor XT-8380S 337MB SCSI HDD (13.5ms)	$1020.00(980.00)
Maxtor XT-8760E 676MB ESDI HDD (16.5ms)	$1330.00(1280.00)
Maxtor XT-8760S 675MB SCSI HDD (16.5ms)	$1330.00(1280.00)
Maxtor PO-12 1.2GB SCSI HDD (13ms)	$1715.00(1650.00)
Quantum LPS52AT 52MB IDE HDD (17ms,64K cache buffer)	$229.00(220.00)
Quantum LPS84AT 84MB IDE HDD (17ms,64K cache buffer)	$295.00(285.00)
Quantum LPS105AT 105MB IDE HDD (17ms,64K cache buffer)	$330.00(320.00)
Quantum LPS12A012 120MB IDE HDD (17ms,256K cache buffer)	$340.00(330.00)
Quantum LPS24A012 240MB IDE HDD (15ms,256K cache buffer)	$614.00(590.00)
Seagate ST-351AX 42MB IDE HDD (28ms)	$198.00(190.00)
Western Digital AC280 80MB IDE HDD (17ms)	$250.00(240.00)
Western Digital AC2120 120MB IDE HDD (15ms)	$312.00(300.00)
Western Digital AC2200 209MB IDE HDD (13ms)	$500.00(480.00)
SyQuest SQ555 44MB SCSI Removable Disk Drive	$305.00(293.00)
SyQuest SQ5110 88MB SCSI Removable Disk Drive	$445.00(428.00)
SyQuest SQ400 44MB Cartridge	$75.00(73.00)
SyQuest SQ800 88MB Cartridge	$108.00(104.00)
SyQuest SQ01 SCSI Adapter w/Software (for internal drive only)	$45.00(43.00)

ADD-ON BOARDS

Mono/Graphics/Printer Card	$16.00(15.00)
AVGA-1 VGA Card w/256K	$33.00(32.00)
TVGA-9000 VGA Card w/256K (Trident 9000 Chipset,upto 512K)	$42.00(40.00)
TVGA-8900C 1MB SuperVGA Card (Trident 8900C Chipset)	$71.00(68.00)
PVGA-1C VGA Card w/256K (WD90C11 Chipset,upto 512K)	$52.00(50.00)
PVGA-1D SuperVGA Card w/1MB (WD90C30 Chipset)	$89.00(86.00)
PVGA-1DW Graphics Accelerator w/1MB & Hi-Color Chip (1280x1024)	$140.00(135.00)
ATi VGA Wonder XL VGA Card (32,768colors,OEM Version)	$135.00(130.00)
ATi VGA Wonder XL VGA Card w/Mouse (OEM Version)	$166.00(160.00)
ATi Graphics Vantage 1MB VGA Card w/Mouse (OEM package) - 11 times faster than SuperVGA cards, 1280x1024	$218.00(210.00)
ATi Graphics Ultra 1MB (VRam) VGA Card w/Mouse (OEM package) - 24 times faster than SuperVGA cards, 1280x1024	$380.00(365.00)
Diamond SpeedStar-14F 1MB VGA Card (16Million colors)	$203.00(195.00)
Diamond Stealth 1MB (VRam) Window Accelerator w/Hi-Color Chip	$265.00(255.00)
Orchid Pro-Designer IIs 1MB VGA Card w/Sierra RAMDAC (32,768colors) - 70Hz refresh rate @1024x768	$160.00(155.00)
Orchid Pro-Designer IIs-E 1MB EISA VGA Card w/Sierra RAMDAC (32,768colors) - 70Hz refresh rate @1024x768	$193.00(185.00)
Orchid Fahrenheit 1280 1MB (VRam) Graphics Accelerator w/Sierra RAMDAC - 32,768colors, 12 times faster than Super VGA cards, 1280x1024	$260.00(250.00)
AT I/O (2 Serial 1 Parallel 1 Game) Card	$15.00(14.00)
Parallel (Printer) Card	$10.00(10.00)
Game Card (Dual ports)	$11.00(11.00)
AT IDE Adapter (Dual floppy & hard disk) w/Cable	$16.00(15.00)
AT Super IDE IO Adapter (Dual floppy & hard disk, 2S, 1P, 1G)	$24.00(23.00)
DTC-2290 EISA IDE Floppy/Hard Disk Contorller (upto 4FDD/4HDD)	$161.00(155.00)
UltraStor 12F-24 1:1 (24MBit/s) ESDI Floppy/Hard Disk Controller	$160.00(155.00)
UltraStor 12C ESDI Caching FD/HD Controller w/0MB (upto 16MB)	$410.00(395.00)
UltraStor 15C IDE Caching FD/HD Controller w/0MB (upto 8MB)	$213.00(205.00)
UltraStor 14F SCSI FD/HD Controller	$244.00(235.00)
Future Domain 850 8-bit SCSI Hard Disk Controller	$66.00(64.00)
Future Domain 1670 16-bit SCSI Floppy/Hard Disk Adapter Kit	$163.00(157.00)
ADAPTEC AHA-1522BK SCSI Adapter Kit	$166.00(160.00)
ADAPTEC AHA-1542B SCSI Floppy/Hard Disk Adapter (card only)	$239.00(230.00)
ADAPTEC AHA-1542BK SCSI Bus Master Host Adapter Kit	$276.00(265.00)
ADAPTEC AHA-1742BK EISA SCSI Bus Master Adapter Kit	$489.00(470.00)



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Saturday 10-4

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MONITORS

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CTX5468A 14" SuperVGA (TriScan) Color Monitor (1024x768,.28dp)	$290.00(279.00)
CTX5468NI 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$325.00(312.00)
CTX1760 17" Flat-Screen Multi-Freq Monitor (1280x1024,.28dp)	$1035.00(995.00)
NEC MultiSync 3FGx 15" Color Monitor (1024x768,.28dp)	$670.00(645.00)
NEC MultiSync 4FG 15" Color Monitor (AccuColor & Digital Controls 1024x768,.28dp)	$780.00(750.00)
NEC MultiSync 5FG 17" Color Monitor (AccuColor & Digital Controls 1280x1024,.28dp)	$1480.00(1425.00)
NEC MultiSync 6FG 21" Color Monitor (AccuColor & Digital Controls 1280x1024,.28dp)	$2980.00(2865.00)
Sony CPD-1304S 14" MultiScan Monitor (Non-Interlaced,.25dp)	$598.00(575.00)
Sony CPD-1604S 17" MultiScan Monitor (Non-Interlaced,.25dp)	$1120.00(1075.00)
Mini-Micro MM1256A 12" Amber Monitor	$86.00(83.00)
Mini-Micro MM1457A 14" Amber Monitor	$104.00(100.00)
Mini-Micro MM1457W 14" Paper-white Monitor	$106.00(102.00)
Mini-Micro MM1467L 14" Paper-white MonoVGA Monitor	$126.00(121.00)
Mini-Micro MM1468 14" VGA Color Monitor (640x480,.41dp)	$240.00(230.00)
ViewSonic 4E 14" SuperVGA Color Monitor (1024x768,.28dp)	$318.00(306.00)
ViewSonic 6 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$359.00(345.00)
ViewSonic 6E 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$350.00(337.00)
Viewsonic 5E 14" Non-Interlaced Color Monitor (1024x768,.28dp 72Hz refresh rate @1024x768)	$418.00(400.00)
ViewSonic 5+ 14" Non-Interlaced Color Monitor (1024x768,.25dp Trinitron tube, 70Hz refresh rate @1024x768)	$520.00(500.00)
ViewSonic 6FS 15" Multi-Frequency Color Monitor (Flat-Screen, Low radiation, 1280x1024,.28dp, 72Hz refresh rate @1024x768)	$619.00(595.00)
ViewSonic 7 17" Multi-Frequency Color Monitor (Digital Auto-Tracking Flat-Screen, Low radiation, 1280x1024,.28dp)	$1080.00(1040.00)
ViewSonic 8 20" Multi-Frequency Color Monitor (Digital Auto-Tracking Low radiation, 1280x1024,.31dp)	$1645.00(1580.00)

KEYBOARDS

Focus-2001 101keys Keyboard w/Hard Dustcover (Click)	$44.00(42.00)
Focus-5001 130keys Keyboard (Dble function keys, calculator, etc.)	$60.00(58.00)
Focus-6000 101keys Keyboard (Soft click)	$38.00(37.00)
Focus-7000 108keys Keyboard (Diagonal Arrows keys, Soft click)	$40.00(39.00)
Focus-8000 111keys Keyboard (Calculator, Soft click)	$46.00(45.00)
Focus-9000 128keys Keyboard (Programmable, same as 5001 K/B)	$72.00(70.00)
Fujitsu-4700 101keys Keyboard	$47.00(45.00)
Honeywell-101WN 101keys Keyboard (3yr. warranty)	$40.00(38.00)
KT-2000 101keys Keyboard (Keytronic made)	$44.00(43.00)

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XT-150W Power Supply	$34.00(32.00)
Mini-AT 200W Power Supply (XT-size)	$40.00(38.00)
AT-200W Power Supply (Full size)	$45.00(43.00)
PS-2 200W UL Power Supply (for Mini-Tower or Baby-AT cases)	$45.00(43.00)
PS-2 230W UL Power Supply (for Mini-Tower or Baby-AT cases)	$48.00(46.00)

SYSTEM BOARDS (0K)

Orchid SuperBoard 486DX-50MHz M/B w/256K Cache **(Local Bus)**	$935.00(900.00)
Orchid SuperBoard 486DX-33MHz M/B w/256 K Cache **(Local Bus)**	$700.00(675.00)
-w / Orchid ProDesigner IIs-D 1MB Local Bus Card	*+$182.00(175.00)*
-w / Orchid Fahrenheit 1280-D 1MB Local Bus Card	*+$245.00(235.00)*
OPTI Baby 486DX-33MHz **EISA Local Bus** M/B w/256K Cache	$800.00(770.00)
OPTI Baby 486DX-33MHz **Local Bus** M/B w/64K Cache	$550.00(530.00)
-w / Tseng Lab ET-4000 1MB Local Bus Card & IDE Multi IO	*+$170.00(165.00)*
-w / S3 1MB Local Bus Graphics Accelerator & IDE Multi IO Card	*$+280.00(270.00)*
VEGA Baby 486DX-50MHz **EISA** M/B w/256K Cache (USA made)	$1175.00(1130.00)
VEGA Baby 486DX-33MHz **EISA** M/B w/256K Cache (USA made)	$957.00(920.00)
OPTI Baby 486DX-50MHz **EISA** M/B w/256K Cache	$1125.00(1080.00)
VEGA Baby 486DX-50MHz M/B w/256K Cache (USA made)	$865.00(830.00)
VEGA Baby 486DX2-50MHz M/B w/256K Cache (USA made)	$745.00(715.00)
VEGA Baby 486DX-33MHz M/B w/64K Cache (USA made)	$598.00(575.00)
UMC Baby 486DX-50MHz M/B w/256K Cache (Write-back cache)	$805.00(775.00)
UMC Baby 486DX2-50MHz M/B w/256K Cache (Write-back cache)	$707.00(680.00)
UMC Baby 486DX-33MHz M/B w/64K Cache (Write-back cache)	$540.00(520.00)
OPTI Baby 486DX-50MHz M/B w/256K Cache (Write-back cache)	$800.00(770.00)
OPTI Baby 486DX2-50MHz M/B w/256K Cache (Write-back cache)	$728.00(700.00)
OPTI Baby 486DX-33MHz M/B w/64K Cache (Write-back cache)	$540.00(520.00)
OPTI Baby 386DX-40MHz M/B w/64K Cache (Write-back cache)	$234.00(225.00)
UMC Baby 386DX-40MHz M/B w/64K Cache (Write-back cache)	$239.00(230.00)
OPTI Baby 386DX-33MHz M/B w/64K Cache (w/Intel CPU)	$224.00(215.00)
OPTI Baby 386DX-33MHz M/B w/64K Cache (w/AMD CPU)	$213.00(205.00)
UMC Baby 386DX-33MHz M/B w/64K Cache (w/Intel CPU)	$229.00(220.00)
UMC Baby 386DX-33MHz M/B w/64K Cache (w/AMD CPU)	$219.00(210.00)
C & T Baby 386DX-33MHz M/B w/64K Cache (w/Intel CPU)	$247.00(237.00)
C & T Baby 386DX-33MHz M/B w/64K Cache (w/AMD CPU)	$236.00(227.00)
****256K Cache upgrade from 64K for all 486 and 386M/B*	*$45.00*
OPTI Baby 386DX-25MHz M/B (w/Intel CPU)	$185.00(178.00)
OPTI Baby 386DX-25MHz M/B (w/AMD CPU)	$177.00(170.00)
C & T Mini 386SX-25MHz M/B	$137.00(132.00)
Headland Mini 386SX-25MHz M/B	$132.00(127.00)

CHASIS

CS-20 Baby AT Case w/200W UL P.S. (3x5.25",2x3.5")	$84.00(81.00)
CS-22 Slim Line Case w/200W UL P.S. (2x5.25",2x3.5")	$87.00(84.00)
CS-35 Mid Vertical Case w/230W UL P.S. (3x5.25",3x3.5",Digital)	$106.00(102.00)
CS-36 Full Vertical Case w/230W UL P.S. (6x5.25",2HD,Digital)	$135.00(130.00)
CS-M1 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5",Digital)	$70.00(67.00)
CS-M2 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5")	$68.00(65.00)
CS-510 Baby AT Case w/200W P.S. (3x5.25",1x3.5")	$66.00(64.00)
CS-931 Mini Vertical Case w/200W P.S. (2x5.25",3x3.5",Digital)	$70.00(67.00)
CS-923 Mid Vertical Case w/200W P.S. (3x5.25",3x3.5",Digital)	$92.00(88.00)
CS-912 Full Vertical Case w/230W UL P.S. (4x5.25",2HD,Digital)	$123.00(118.00)
Diamond Series: (Black color model available +$3.00)	
CS-130 Full Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$156.00(150.00)
CS-230 Mid Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$146.00(140.00)
CS-330 Mini Vertical Case w/220W UL P.S. (2x5.25",3x3.5",Digital)	$90.00(87.00)
CS-530 Desktop Case w/250W UL P.S. (2x5.25",2x3.5",2HD,Digital)	$103.00(99.00)
CS-730 Baby AT Case w/250W UL P.S. (2x5.25",1x3.5,1HD,Digital)	$94.00(91.00)
CS-830 Slim Line Case w/220W UL P.S. (1x5.25",1x3.5",1HD,Digital)	$90.00(87.00)

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Citizen GSX-130 Printer (24pin/180cps/80col/color option)	$241.00(232.00)
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Citizen GSX-145 Printre (24pin/192cps/132col/color option)	$375.00(360.00)
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Panasonic KX-P1180i Printer (9pin/240cps/80col)	$159.00(154.00)
Panasonic KX-P1123 Printer (24pin/240cps/80col)	$199.00(192.00)
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Panasonic KX-P2180 Quiet Printer (9pin/240cps/80col/color option)	$179.00(172.00)
Panasonic KX-P2123 Quiet Printer (24pin/240cps/80col/color option)	$249.00(239.00)
Panasonic KX-P2124 Quiet Printer (24pin/320cps/80col/color option)	$333.00(320.00)
Panasonic KX-P2624 Quiet Printer (24pin/300cps/132col)	$398.00(385.00)
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Panasonic KX-P4430 Laser Printer (5ppm/1MB/300dpi)	$915.00(880.00)
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Star NX-2430 Multi-Font Printer (24pin/250cps/80col)	$244.00(235.00)
Star NX-2420R Rainbow Color Priner (24pin/250cps/80col)	$289.00(278.00)
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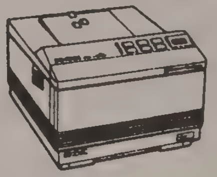

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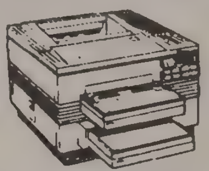

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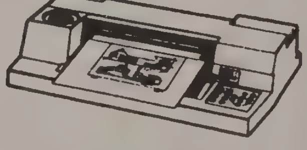

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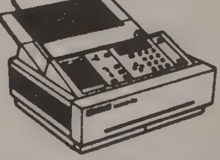

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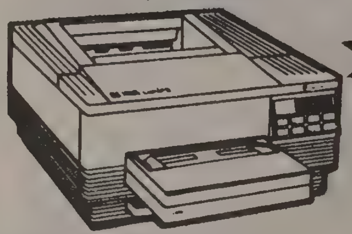

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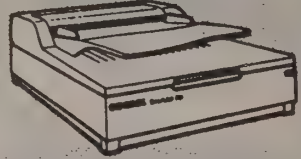

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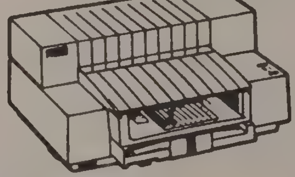

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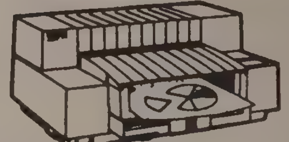

- 300 dpi Output
- Wide variaty of built-in fonts
- 16K receive buffer
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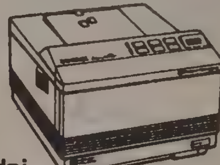

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- PCL 5 scalable typefaces
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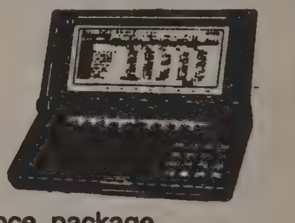

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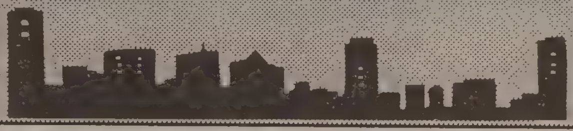

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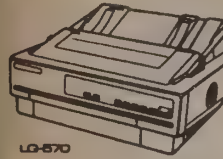

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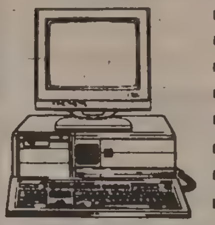

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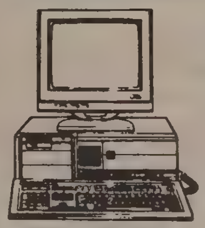

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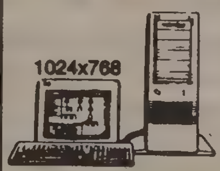

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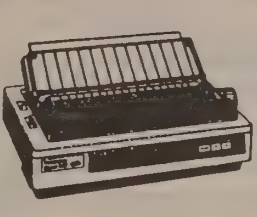

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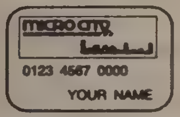

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continued from page 76

Oxxi for a list of these companies.) ACS ships with drivers for all known network cards.

OTHER NEWS FROM OXXI

While I was at Oxxi, Gary Bonham gave me a detailed look at two products he was programming for Oxxi: Presentation Master and Video Stage. Presentation Master is a shipping product while Video Stage should be released by the time you read this. Gary is the inventor of the Anim format and the one who wrote Showanim, one of the great IFF animation players.

Presentation Master is going to be a very important product for the Amiga. As you might gather from the title, it is a presentation authoring program. You can make presentations using structured drawings, IFF pictures, business charts and graphs, and 3-D title and text rendering. Presentation Master works internally with 24-bit color. The slides I saw from its color PostScript output matched anything I'd seen from any platform. Presentation Master can generate truly professional-level presentation slides. For 24-bit high-resolution display, the program supports DMI's Resolver board. It also supports Adobe Illustrator clip art. The structured drawing editor is phenomenal.

Video Stage is also a presentation-type program, but it is designed to run on an Amiga 500, though it obviously would run on other Amigas as well. Bonham called it a cross between VideoTitler and Lights!Camera!Action!, two products from Oxxi's Aegis Development division. Video Stage is capable of doing some beautiful screen transitions—sixty of them. Words can fly onto the page all at one time or letter by letter. Buttons and hot spots are also supported. It works as a powerful slide show maker. This program could easily be used for video titling and full presentations where 24-bit color is not needed. We'll take an in-depth look at Presentation Master and Video Stage in the future.

Oxxi will also be releasing a network version of its database program SuperBase. The PC version of SuperBase is sold by another company; however, John Houston told me that the two companies have agreed to keep compatible file formats and data manipulation languages, except for unavoidable platform differences.■

World Of Commodore Amiga

Don't miss the World of Commodore Amiga show, which will be held September 11—13 at the Pasadena Hilton. This is the first time this event has been held in the Los Angeles area. Commodore will be making some important product announcements. Call (416)285-5950 for details.

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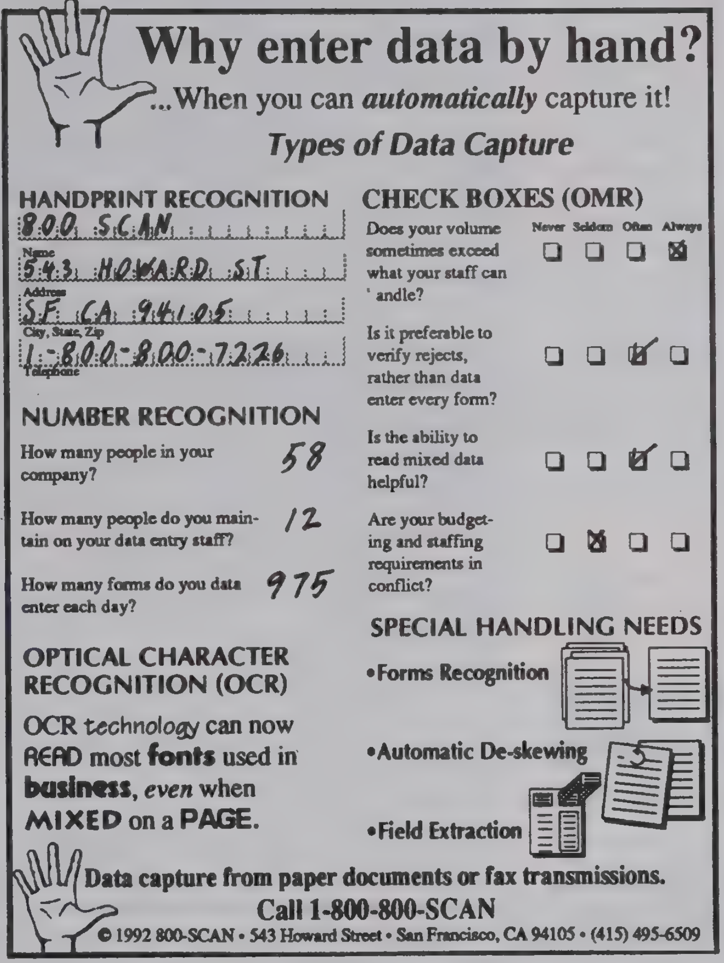

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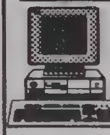

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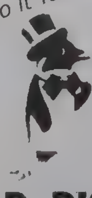

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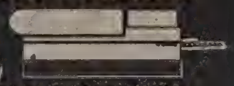

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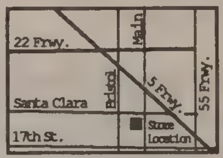

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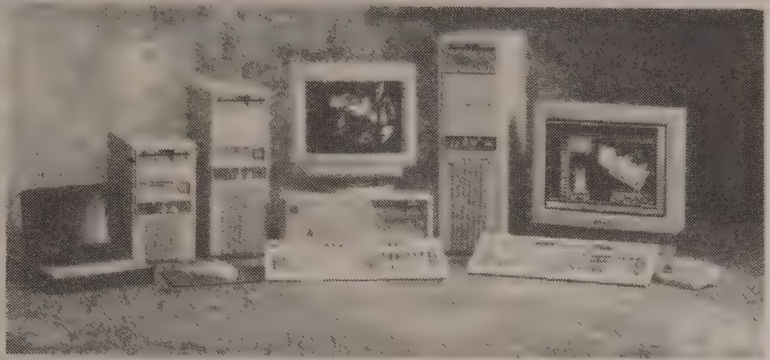

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ADVERTISERS INDEX

3-6 COMPUTERS 88
3-D RESEARCH 103
20/20 TECHNOLOGIES 126
A & P COMPUTERS 126
A+ COMPUTER SYSTEMS 30
A-1 COMPUTERS 77
A.J. COMPUTER SUPPLIES 108
ABACUS 102
ABI SYSTEMS, INC. 53
ACE, INC 25
ACP SUPERSTORE 55,158
ACS - ADVANCED COMPUTERS 136
ALCOM SYSTEMS 159
ALMAX SOFTWARE 57
ALTIMA SYSTEMS 2
AMERICAL GROUP 3
AMERICAN RELIANCE 94
ASEAN COMPUTER TECHNOLOGIES 89
ATC 28
B & N COMPUTER 161
BINARY GROUP, INC. 26,27
BINOMIAL SYSTEMS 36
BLUE CHIP AUTOMATION 125
BMI COMPUTERS 79
CALIFORNIA COMPUTER SYSTEMS 71
CD GROUP 161
CELL MICRO 8
CERTIFIED NETWORK EDUCATORS 94
CITICOM COMPUTER, INC. 39
CLOVER BUSINESS SYSTEMS 107
COMEDONE COMPUTERS 10
COMPU EXPO 146,147
COMPUTEK 129
COMPUTER BUSINESS CENTER 138,139
COMPUTER CONCEPT 143
COMPUTER CONNECTING POINT 43
COMPUTER EDUCATION INTL 37
COMPUTER MARKETPLACE 135
COMPUTER MAX 158
COMPUTER PACER 15
COMPUTER SUPPLIES UNLIMITED 23
COMPUTER SUPPLY CLUB 52
COMPUTER SWAP 14
COMPUTER WIZ 63
COMPUTIX 124
CORPORATE POINT COMPUTERS 87
CORPORATE SYSTEMS CENTER 49
CREATIVE COMPUTERS 123
D.C. COMPUTER, INC. 61
DATA COMPUTER CENTER 102
DATA DEPOT 76
DATA JETS 31
DAV-TECH 4,5
DENNOW CORPORATION 16,17
DHT 96,97
DOMINO SELF SERVICE CTR. 33
DYNAMIC OFFICE SYSTEMS 106
EDISON TECHNOLOGIES 113
ELECTRONIC MUSIC BOX 75
EVERNET SYSTEMS, INC. 20
FLEXCOM, INC. 143
FRY'S ELECTRONICS 81-85,163
GARY DAVIS & ASSOCIATES 12
GATETRONIX CONTROL SYSTEMS 137
GENERAL COMPUTER 105
GOODMAN MUSIC 9
H. CO. COMPUTER PRODUCTS, INC. 160
HACKER ELECTRONICS 12
HAL COMPUTER SYSTEMS 105
INFINITI 145
INFINITY PC & PERIPHERALS, INC. 130,131
INPUT AUTOMATION 92
K-NET 34
KATRONIC COMPANY 100
KBBS 136
LA COMPUTER EXPRESS 79,113
LA ON LINE 142
LAPTOP PLUS 110,111
LINNEX COMPUTERS, INC. 80
LOGICACHE COMPUTERS, INC. 38
M-TEK 46
MAGICTEK COMPUTERS, INC. 90,91
MAXIMUS 145
MICRO AMERICA 119
MICRO OPERATIONS 21
MICRO-CITY/GST, INC. 152,153
MICROAGE 95
MICROSEL PERIPHERAL 161
MICROTEK COMPUTER, INC. 7
NET TECHNOLOGY 65
NEW AGE COMPUTERS 119
NEW TECHNOLOGIES 132
NIC MICROSYSTEMS 86
PACIFICO COMPUTER CENTER 109
PASADENA COMPUTER CENTER 114,115
PC HOUSE 62
PC LAND COMPUTERS 127
PC SYSTEMS DESIGN 72,73
PC'S 2000 31
PEN BASED EXPO 44
PERIPHERAL REPAIR CORPORATION 88
QUALITY COMPUTER 116
QUARTERDECK OFFICE SYSTEMS 164
RANTEK COMPUTER CENTER 41
RENAU COMPUTER SYSTEMS 45
RESOULTION BUSINESS PRESS 101
RESOURCE INFORMATION SYSTEMS 35
REYES ELECTRONICS 92,104
ROYAL COMPUTER 116
SAGER 68,69
SEYBOLD SEMINARS 50,51
SILICON STAR INT'L 93
SIM-TRADE CO. 44
SMART MICRO TECHNOLOGIES 86
SOFT-HARD SYSTEMS 140
SONGTECH INTERNATIONAL 38
STAR SYSTEM TECHNOLOGY 101
SYSGAN 54
SYSTEM DYNAMIC GROUP 59
THE ESSENCE GROUP 149-151
THE PC FACTORY 11
TOP COMPUTER SYSTEMS 19
TOWER COMPUTER 121
TRADE TEK COMPUTER SYSTEMS 67
TRANSNATIONAL ELECTRONICS, INC. 154
TSC U.S. TURBO SYSTEM 124
UNITED MICRO SYSTEMS 53
UNITEK COMPUTER STORES 13
USM DISTRIBUTORS 98,99
VALLEY COMPUTER 47
WECLY 21
WESTERN MICRO 66

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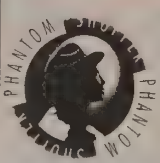

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PC Computing, April 1992

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SX/16	4MB Kit	159.00
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P.M.386/25	2MB MD	339.00
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OKI Laser 800,820	2MB Module	129.00
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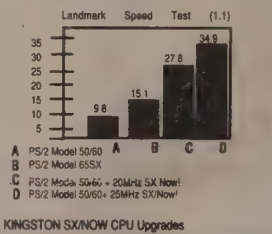

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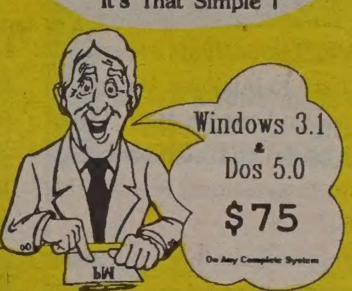

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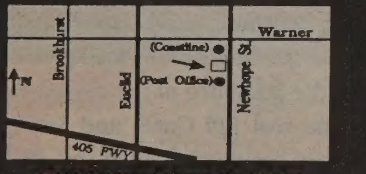

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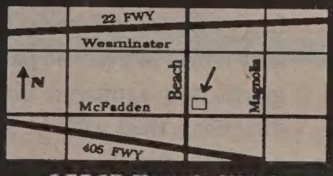

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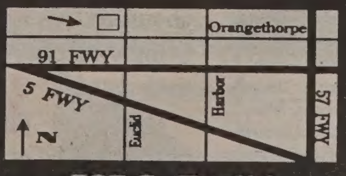

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The Inner Sanctum Of The Microsoft Boardroom

Or When In Doubt, Dream It Out

BY JOHN C. DVORAK

DVORAK'S LAST COLUMN

© 1992 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

Our story left off in Redmond, where Bill Gates was about to walk in on the office of the Presidents, populated by his new batch of sixteen members.

Gates opened the door. Inside, sixteen men were punching and kicking at each other. Steve Ballmer had Mike Maples by the head, ramming Maples' head into the wall while shouting, "Give up yet??!!"

Maples grabbed hold of Ballmer's trousers and lifted him high, and the two of them crashed to the floor. Gates looked pleased. "Ah, I see my Presidents are competing with each other. That's good."

Just then a small 4-foot gnome of a character ran between Gates legs and screamed at the top of his lungs—"TEN-HUP!! Mr. Gates is here!"—then blew on a police whistle.

The sixteen men snapped to attention and moved around ordering themselves into line with Ballmer at the far left. The little gnome blew the whistle once again, and the entire line of Presidents saluted military style and clicked their heels together simultaneously.

Gates looked left and then looked right. "At ease."

The men each took a seat at the large board room table as Gates, closely followed by the little gnome, walked to the head of the table.

Gates stood while the others sat. "Gentlemen, we have a problem. Our growth is slowed. OS/2 is actually being used by people. There's a book out about me that I don't like. And Windows is being criticized. In short, our company is under attack."

Mike "Bud" Rabinowitz, president number 10, looked at Gates. He had a sly, cocky smile on his face. "You said you have a problem? That sounds like four problems, boss. Maybe you should have finished that Harvard honors math course, eh?" He laughed and looked around to see stone silence. "Hey, it's a joke."

The other thirteen men dropped their heads. Gates, fuming, pulled a controller from his back pocket and pushed a button. Suddenly the floor opened up under Rabinowitz, and he fell about two stories down into a pit of hungry alligators. Anguished screams could be heard turning to silence as the trap door closed as fast as it opened. Gates looked at Ballmer. "Let's add one of my lookalikes to the presidents' office." Ballmer nodded nervously.

Gates finally sat. "I hope this is a lesson for all of you. Now back to business. We need a strategy to turn around our situation. I want faster growth, no more OS/2, no more books, no more criticism. Suggestions? Round table speed session. Go!"

One by one the presidents threw out ideas. "Lower prices," "Buy IBM," "Shoot the writers," "Buy the computer magazines," "Advertise more," "Give your money away," "Produce better products," "Sabotage OS/2 installations." Round and round they went, maniacally suggesting one thing or another. Faster and faster the suggestions came as Gates watched intently. The pace was frantic, but stopped suddenly as Vern Millerman said, "Get out of the business of *selling* software."

Gates looked at him. "We're a software company. What do you propose?"

Millerman stood. "That we only rent software. At a low price with no charge for updates. Five dollars a month for Microsoft Word. People get a bill for their software use. Instead of paying $300 for a package, they get it free for a few months then a small monthly charge. We make it so the totals including the free upgrades will be far less than the price they'd ever pay for the package plus the upgrades from a software store. In fact it will be dirt cheap. Heck with the $10, make it a dollar a month. For the entire suite of Microsoft applications we can charge $2 per month. With 100 million users that will net $200 million a month or $2.4 billion per year. I mean, who could afford not to buy into this plan?"

Gates nodded and asked, "Where's the growth in this?"

"Market share. We can wipe out the entire industry, then come back and say we were wrong and charge everyone hundreds of dollars for continued use. Unbeknownst to the users the software will expire on a certain date."

Ballmer, seeming a little annoyed by Millerman's idea chimed in. "This is an interesting idea, but I don't see how it will change our image or stop books from coming out."

Gates looked at Ballmer and reached into his pocket for the controller. "I like the idea." Beads of perspiration appeared suddenly on Ballmer's forehead. Gates pushed a button and Millerman fell though a trap door into the pit. Horrible screams were heard. Gates had a look of satisfaction. "In fact, the idea is so good that I'm taking credit for it. Any objections from the board?" The entire group yelled, "NO SIR!"

Gates looked at Ballmer. "Recruit a new president from IBM quitters. Maybe we can learn something from him."

Ballmer made a note, just as a goon squad of black-shirted Microsoft renegades stormed into the room carrying Uzis. The leader spoke first. "Pigs, ptooey! We know what you're up to. We've been monitoring your every move. First you dump Quick BASIC...now this wild scheme! We want Microsoft quality to be returned. *Forever*!" The whole group began a chant "Quality, quality, quality!

Gates broke into tears. "My gosh, you're all right! What a fool I've been. How could this happen? I will never again forsake my duty as a guardian of quality and the American way! God bless you for showing me the light!"

The lights in the room dimmed; a curtain closed across the stage where the boardroom scene took place.

In the audience of the closed auditorium sat the real Bill Gates and Steve Ballmer. Ballmer bounced a bit in his chair. "Well, boss? What do you think? Me and Maples wrote this play. We could do it for COMDEX. What do you think?"

Gates pulled out a Tootsie Roll pop from his pocket, tore off the wrapper and stuck it in Ballmer's mouth.

"It needs a little work, Steve." ■

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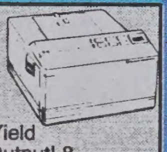

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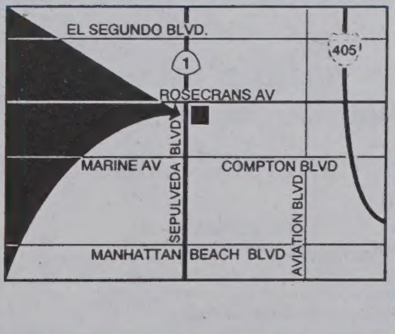

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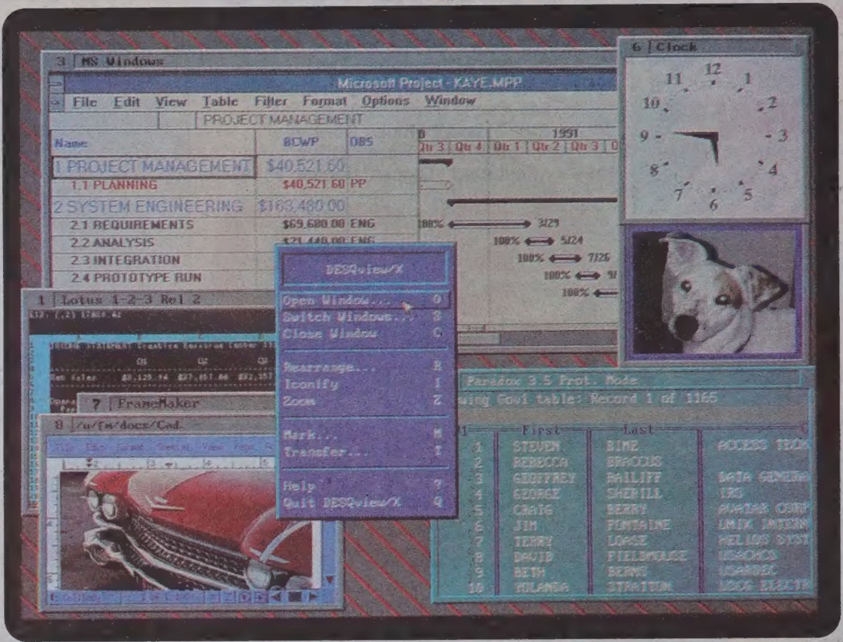

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